

PUBLIC

NATO MILITARY POSITION
FOR
WORLD RADIOCOMMUNICATION CONFERENCE 2015
(WRC-15)

June 2015

Table of Contents

Agenda Item	Page
Executive summary	1
<i>NATO Military Position Statements</i>	
Agenda Item 1.1	7
<i>to consider additional spectrum allocations to the mobile service on a primary basis and identification of additional frequency bands for IMT and related regulatory provisions, to facilitate the development of terrestrial mobile broadband applications, in accordance with Resolution 233 (WRC-12).</i>	
Agenda Item 1.3	17
<i>to review and revise Resolution 646 (Rev.WRC-12) for broadband public protection and disaster relief (PPDR), in accordance with Resolution 648 (WRC-12).</i>	
Agenda Item 1.4	20
<i>to consider possible new allocation to the amateur service on a secondary basis within the band 5 250-5 450 kHz in accordance with Resolution 649 (WRC-12).</i>	
Agenda Item 1.5	23
<i>to consider the use of frequency bands allocated to the fixed-satellite service not subject to Appendices 30, 30A and 30B for the control and non-payload communications of unmanned aircraft systems (UAS) in non-segregated airspaces, in accordance with Resolution 153 (WRC-12).</i>	
Agenda Item 1.6.1	29
<i>to consider possible additional primary allocations to the fixed-satellite service (Earth-to-space and space-to-Earth) of 250 MHz in the range between 10 GHz and 17 GHz in Region 1; and review the regulatory provisions on the current allocations to the fixed-satellite service within each range, taking into account the results of ITU R studies, in accordance with Resolutions 151 (WRC 12) and 152 (WRC 12), respectively.</i>	
Agenda Item 1.6.2	32
<i>to consider possible additional primary allocations to the fixed-satellite service (Earth-to-space) of 250 MHz in Region 2 and 300 MHz in Region 3 within the range 13-17 GHz; and review the regulatory provisions on the current allocations to the fixed-satellite service within each range, taking into account the results of ITU R studies, in accordance with Resolutions 151 (WRC 12) and 152 (WRC-12), respectively.</i>	
Agenda Item 1.8	35
<i>to review the provisions relating to earth stations located on board vessels (ESVs), based on studies conducted in accordance with Resolution 909 (WRC-12).</i>	
Agenda Item 1.9.1	37
<i>to consider, in accordance with Resolution 758 (WRC 12) possible new allocations to the fixed-satellite service in the frequency bands 7 150-7 250 MHz (space-to-Earth) and 8 400-8 500 MHz (Earth-to-space), subject to appropriate sharing conditions.</i>	
Agenda Item 1.9.2	40
<i>to consider, in accordance with Resolution 758 (WRC 12) the possibility of allocating the bands 7 375-7 750 MHz and 8 025-8 400 MHz to the maritime-mobile satellite service and additional regulatory measures, depending on the results of appropriate studies.</i>	

PUBLIC

Agenda Item 1.10	43
<i>to consider spectrum requirements and possible additional spectrum allocations for the mobile-satellite service in the Earth-to-space and space-to-Earth directions, including the satellite component for broadband applications, including International Mobile Telecommunications (IMT), within the frequency range from 22 GHz to 26 GHz, in accordance with Resolution 234 (WRC-12).</i>	
Agenda Item 1.11	45
<i>to consider a primary allocation for the Earth exploration-satellite service (Earth-to space) in the 7-8 GHz range, in accordance with Resolution 650 (WRC-12).</i>	
Agenda Item 1.12	48
<i>to consider an extension of the current worldwide allocation to the Earth exploration satellite (active) service in the frequency band 9 300-9 900 MHz by up to 600 MHz within the frequency bands 8 700-9 300 MHz and/or 9 900-10 500 MHz, in accordance with Resolution 651 (WRC-12).</i>	
Agenda Item 1.14	51
<i>to consider the feasibility of achieving a continuous reference time-scale, whether by the modification of coordinated universal time (UTC) or some other method, and take appropriate action, in accordance with Resolution 653 (WRC-12).</i>	
Agenda Item 1.16	54
<i>to consider regulatory provisions and spectrum allocations to enable possible new Automatic Identification System (AIS) technology applications and possible new applications to improve maritime radiocommunication in accordance with Resolution 360 (WRC-12).</i>	
Agenda Item 1.17	56
<i>to consider possible spectrum requirements and regulatory actions, including appropriate aeronautical allocations, to support wireless avionics intra-communications (WAIC), in accordance with Resolution 423 (WRC-12).</i>	
Agenda Item 9.1.1	60
<i>to consider and approve the Report of the Director of the Radiocommunication Bureau, in accordance with Article 7 of the Convention on the activities of the Radiocommunication Sector since WRC-12 in accordance with Resolution 205 (WRC-12).</i>	
Agenda Item 9.1.6	62
<i>to consider and approve the Report of the Director of the Radiocommunication Bureau, in accordance with Article 7 of the Convention on the activities of the Radiocommunication Sector since WRC-12 in accordance with Resolution 957 (WRC-12).</i>	
GFT	64
<i>Possible Agenda Item for WRC 15.</i>	

AI	NATO Military Position Statements for WRC-15
1.1	<p>NATO members are urged to ensure the protection of spectrum equities for NATO military systems within the ITU-R technical study process. NATO objects to make new allocations to the mobile service or designation for IMT systems which degrade the operating capabilities of NATO military systems.</p> <p>NATO does not support new mobile allocations or IMT designations in NATO harmonized bands above 6 GHz. Specific positions regarding potentially targeted frequency bands are as follows:</p> <ul style="list-style-type: none"> • 410-450 MHz: NATO does not support an IMT identification in this range because it is essential for applications in the MOBILE except aeronautical mobile allocation and important for radiolocation applications. For the frequency range 410-450 MHz: There are no ITU-R studies showing compatibility between IMT systems and existing services in the 420-450 MHz frequency range, in particular radiolocation taking into account footnote No. 5.269. Therefore, NATO supports no change to the band 420-450 MHz and no change to No. 5.269. • 1 215-1 300 MHz: NATO does not support an allocation to the mobile service or identification for IMT due to its reliance on radio navigation satellite and radiolocation systems. This band is essential for NATO, specifically for long range and high resolution radars. NATO Nations operate radars using this band as part of the NATO Integrated Air and Missile Defence System which is a cornerstone of NATO air and defence missile policy. • 1 300-1 350 MHz: NATO does not support the band as a candidate band, because it is essential for NATO, specifically for long range and high resolution radars. NATO Nations operate radars using this band as part of the NATO Integrated Air and Missile Defence System which is a cornerstone of NATO air and defence missile policy. Studies indicate that out-of-band and spurious emissions could seriously degrade radiolocation services. • 1 350-1 400 MHz: NATO does not support a global allocation to the mobile service or identification for IMT as studies demonstrate incompatibility between incumbent services and IMT. This band is essential for NATO, specifically for long range and high resolution radars, terrestrial radio relays (fixed and mobile) and unmanned systems. NATO Nations operate radars using this band as part of the NATO Integrated Air and Missile Defence System which is a cornerstone of NATO air and missile defence.

1.1	<ul style="list-style-type: none"> • 1 427-1 452 MHz: NATO does not favour an IMT identification of this NATO harmonised band because studies demonstrate that large separation distances are required between IMT and military systems, in particular fixed and mobile radio relay and unmanned systems. Future military demand in this band will be predominantly for tactical wireless broadband applications. These military usages should be taken into account prior to any decision to introduce IMT in this band. NATO supports retaining the priority for Aeronautical Mobile Telemetry (AMT) over other mobile services in Region 2 only, provided by Footnote 5.343 in the band 1 435-1 535 MHz. NATO requires appropriate protection of incumbent military systems. • 1 452-1 492 MHz: NATO supports an IMT identification in this band in Region 1, providing that studies show that there is no impact to NATO systems in adjacent bands. NATO also supports retaining the priority for Aeronautical Mobile Telemetry (AMT) over other mobile services in Region 2 only, provided by Footnote 5.343 in the band 1 435-1 535 MHz. • 1 492-1 518 MHz: NATO does not favour an IMT identification of this NATO harmonised band because studies demonstrate that large separation distances are required between IMT and military systems, in particular fixed and mobile radio relay and unmanned systems. Future military demand in this band will be predominantly for tactical wireless broadband applications. These military usages should be taken into account prior to any decision to introduce IMT in this band. NATO supports retaining the priority for Aeronautical Mobile Telemetry (AMT) over other mobile services in Region 2 only, provided by Footnote 5.343 in the band 1 435-1 535 MHz. NATO requires appropriate protection of incumbent military systems. • 1 518-1 525 MHz: NATO does not support an IMT identification of this band because there is a NATO harmonised military utilization, presently still for TRR; however, future demand will be predominantly for tactical wireless broadband applications. NATO does support retaining the priority for Aeronautical Mobile Telemetry (AMT) over other mobile services in Region 2 only, provided by Footnote 5.343 in the band 1 435-1 535 MHz. • 1 559-1 610 MHz: NATO does not support an allocation to the mobile service or identification for IMT due to its reliance on radio navigation satellite and radiolocation systems. • 1 695-1 710 MHz: NATO does not support an allocation to the mobile service in this band due to military utilization in certain geographical areas.
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1.1	<ul style="list-style-type: none"> • 2 025-2 110 MHz: NATO does not support an IMT identification in these bands because there is an essential NATO harmonised military utilization especially for tactical radio relay and unmanned systems. Moreover, ITU-R studies show that sharing between the existing space operation, space research, earth exploration satellite services, and IMT in these is bands is not feasible. • 2 200-2 290 MHz: NATO does not support an IMT identification in these bands because there is an essential NATO harmonised military utilization especially for tactical radio relay and unmanned systems. Moreover, ITU-R studies show that sharing between the existing space operation, space research, earth exploration satellite services, and IMT in these is bands is not feasible. • 2 700-2 900 MHz: NATO does not support an allocation to the mobile service because it is a NATO harmonised military band and heavily utilized for radiolocation. It is also noted that studies indicate that mobile service cannot be operated co-channel, co-coverage with radio determination service. Previous experience and studies indicate that out of band and spurious emissions from the adjacent band could seriously degrade radiolocation services. • 2 900-3 400 MHz: NATO does not support an allocation to the mobile service because it is a NATO harmonised military band and heavily utilized for radiolocation. It is also noted that previous experience and a study indicate that out-of-band and spurious emissions could seriously degrade radiolocation services. • 3 400-3 800 MHz: NATO recognizes the provisions of FN 5.430A of the Radio Regulations and that ECC has updated the framework for the use of this band to respond to the requirement of future usage of IMT systems with larger bandwidth in this frequency band (ECC/DEC(11)06). NATO also recognizes the adoption by the EU of the EC DEC 2014/276/EU. It should be noted that NATO relies on operating airborne radiolocation systems in the band 3 400-3 410 MHz on a secondary basis. The lower Radiolocation band 2 900-3 400 MHz needs protection from IMT out-of-band and spurious emissions that could seriously degrade the radiolocation services. NATO recognises that in Region 2, the band 3 400-3 600 MHz is allocated to the Radiolocation service and this is an important service for military uses. • 3 800-4 200 MHz: NATO highlights the significance of this band to the Alliance due to the importance of the military use of the commercial services (FSS).
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1.1	<ul style="list-style-type: none"> • 4 400-5000 MHz: NATO does not support the band as a candidate band because it is an essential NATO harmonised military band and heavily utilized for FIXED and MOBILE (including aeronautical) military applications. Many different military systems are currently operating in this band having had to migrate following the release of lower bands in the past notably to accommodate IMT systems and further encroachment could seriously jeopardize NATO military operations. • 5 350-5 470 MHz: NATO does not support a mobile service allocation or identification for IMT/RLAN in the 5350-5470 MHz band at this time because no techniques have yet been proven or demonstrated to mitigate potential interference to radars in the band. This band is essential for NATO-wide radiolocation utilization including frequency hopping radars. Further study is required to determine the efficacy of potential mitigation measures. • 5 725-5 850 MHz: NATO does not support a mobile service allocation or identification for IMT/RLAN in the 5725-5850 MHz band at this time because no techniques have yet been proven or demonstrated to mitigate potential interference to radars in the band. This band is essential for NATO-wide radiolocation utilization including frequency hopping radars further study is required to determine the efficacy of potential mitigation measures. • 5 850-5 925 MHz: NATO does not support an IMT identification of this band unless essential military spectrum usage is adequately safeguarded. Previous studies indicate that out-of-band and spurious emissions could seriously degrade radiolocation services below 5850 MHz. • 5 925-6 425 MHz: NATO highlights the significance of this band to the Alliance due to the importance of the military use of the commercial services (FSS).
1.2	<p>NATO supports all regulation and harmonisation work aiming to make best use of the band by the MOBILE SERVICE. NATO foresees a possible future military use in parts of the band 694-790 MHz for broadband mobile applications.</p>
1.3	<p>NATO supports the review and revision of Resolution 646, taking into account that military access to radio spectrum will not be constrained. In Region 1 NATO opposes any new identification of broadband PPDR spectrum in the band 380 MHz to 400 MHz. The implementation of advanced technology in the bands 380-385 MHz and 390-395 MHz should take into consideration the impact of the out-of-band emission into the adjacent bands by a recommendation in accordance with Resolution 648.</p>

1.3	In Region 2 NATO opposes any new identification of broadband PPDR spectrum in the bands 380-470 MHz and 5 850-5 925 MHz.
1.4	NATO does not favour a worldwide secondary allocation to the Amateur service within the 5 250-5 450 kHz band.
1.5	NATO supports all regulatory action, which permits the usage of FSS bands for UAS CNPC links provided that ITU-R studies show that FSS can be used for CNPC in non-segregated airspace without constraining any incumbent services including typical FSS operations, or other military systems.
1.6.1	NATO does not support additional allocations to the FSS in the bands 10.0-10.5 GHz and 13.25-17.0 GHz, in particular the band 14.62-15.23 GHz which is NATO harmonised for Fixed and Mobile applications (including aeronautical), unless technical studies show compatibility between FSS and existing primary services. Recognizing resolves 4 of Resolution 151 (WRC-12), NATO supports focusing ITU-R studies in the frequency range 10.5-10.7 GHz and 11.7-12.5 GHz.
1.6.2	NATO does not support additional primary allocations to the fixed-satellite service (FSS) (Earth-to-space) of 250 MHz in Region 2 and 300 MHz in Region 3 within the range 13-17 GHz.
1.8	NATO supports more flexibility to ESV operation while continuing to protect the other services to which the 5 925-6 425 MHz and 14-14.5 GHz bands are allocated.
1.9.1	Based on the results of sharing studies, NATO supports additional allocations to the FSS in the bands 7 150-7 250 MHz and 8 400-8 500 MHz noting that, in the latter band FSS systems will be limited to operations from a fixed, known location not encompassing small VSAT-like FSS earth stations.
1.9.2	NATO does not support a new allocation to MMSS (Earth-to-space) in the 8025-8400 MHz band because of sharing difficulties with existing services. Noting however that ITU-R studies show a possible compatibility with other services in the 7375-7750 MHz band, NATO may consider a possible new allocation to the MMSS (space-to-Earth) in this band provided it does not create additional regulatory burden for military operations.

1.10	NATO supports no change for the frequency bands 24.05-24.25 GHz and 25.25-26GHz.
1.11	NATO supports allocation of the band 7190-7250 MHz to the EESS (E-s), based on studies that demonstrate compatibility with incumbent services and a future FSS (s-E) under Agenda Item 1.9.1.
1.12	If studies show compatibility with the incumbent radio services and other services in nearby allocations are adequately protected from unwanted emissions, NATO will support an additional allocation of up to 600 MHz to complement the existing 9 300-9 900 MHz EESS allocation. The extension band should be only used by SAR systems requiring more than 600 MHz bandwidth. Based on the results of studies, NATO does not support an EESS allocation below 9 200 MHz.
1.14	NATO will continue to monitor the progress on this item and will evaluate the potential impact on military systems, but NATO has determined that if modified UTC were adopted, a transition period of five years or more would be required to implement this change.
1.16	NATO supports the consideration of regulatory provisions or enhanced AIS technology applications and for enhanced maritime radio communication, while protecting the integrity of the original operational purpose of AIS.
1.17	NATO supports a primary AM(R)S allocation in the 4 200-4 400 MHz band limited to WAIC to accommodate the required frequency spectrum of 145 MHz providing that the protection of the military ARNS (radio altimeters) in this band is ensured through appropriate provisions of the RR.
9.1.1	NATO supports the adequate protection of the MSS band 406-406.1 MHz while not putting undue constraints to the radio services allocated in the adjacent frequency bands.
9.1.6	NATO is of the view that it is unnecessary to change any Article 1 definitions.
GFT	NATO supports exploring all technical solutions and required regulatory provisions to facilitate global flight tracking provided that regulatory changes do not reduce or prohibit the existing operational capabilities of military systems, e.g. military interrogation friend or foe (IFF) systems.

Agenda Item 1.1

to consider additional spectrum allocations to the mobile service on a primary basis and identification of additional frequency bands for IMT and related regulatory provisions, to facilitate the development of terrestrial mobile broadband applications, in accordance with Resolution **233 (WRC-12)**.

Military Importance HIGH

Issue

Resolution **233 (WRC-12)**

Studies on frequency-related matters on International Mobile Telecommunications and other terrestrial mobile broadband applications

resolves to invite ITU R

- 1 to study additional spectrum requirements, taking into account:
 - technical and operational characteristics of IMT systems, including the evolution of IMT through advances in technology and spectrally-efficient techniques, and their deployment;
 - the bands currently identified for IMT, the technical conditions of their use, and the possibility of optimizing the use of these bands with a view to increasing spectrum efficiency;
 - the evolving needs, including user demand for IMT and other terrestrial mobile broadband applications;
 - the needs of developing countries;
 - the time-frame in which spectrum would be needed;
- 2 to study potential candidate frequency bands, taking into account the results of the studies under resolves to invite ITU R 1, protection of existing services and the need for harmonization,

further resolves

- 1 that the studies referred to in resolves to invite ITU R 2 include sharing and compatibility studies with services already having allocations in the potential candidate bands and in adjacent bands, as appropriate, taking into account the current and planned use of these bands by the existing services, as well as the applicable studies already performed in ITU R;
- 2 to invite WRC 15 to consider the results of the above studies and take appropriate actions.

Frequency Range/Bands:

The final CPM Report to WRC-15 contains a list of potential candidate frequency bands for the introduction of IMT. For each of these potential candidate bands one or more of the following methods are applicable, no change to the Radio Regulations (Method A); new primary mobile service (MS) allocation (Method B); and footnote IMT designation (Method C). Methods B and C also contain supplemental regulatory provisions to protect existing services. The following list contains the final list of potential candidate bands and their applicable methods:

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470-694/698 MHz – Methods A (NOC), B (ADD MS Table (TOA), or footnote (FN)), and/ or C (IMT FN)

1 350-1 400 MHz – Methods A (NOC), B (ADD MS TOA or FN), and/or C (IMT FN)

1 427-1 452 MHz – Methods A (NOC) or C (IMT)

1 452-1 492 MHz – Methods A (NOC) or C (IMT)

1 492-1 518 MHz – Methods A (NOC) or C (IMT)

1 518-1 525 MHz – Methods A (NOC) or C (IMT)

1 695-1 710 MHz – Methods A (NOC), B (ADD MS TOA or FN), and/or C (IMT FN)

2 700-2 900 MHz – Methods A (NOC), B (ADD MS TOA or FN), and/or C (IMT FN)

3 300-3 400 MHz – Methods A (NOC), B (ADD MS TOA or FN), and/or C (IMT FN)

3 400-3 600 MHz – Methods A (NOC), B (ADD MS TOA or FN), and/or C (IMT FN)

3 600-3 700 MHz – Methods A (NOC), B (ADD MS TOA or FN), and/or C (IMT FN)

3 700-3 800 MHz – Methods A (NOC), B (ADD MS TOA or FN), and/or C (IMT FN)

3 800-4 200 MHz – Methods A (NOC), B (ADD MS TOA or FN), and/or C (IMT FN)

4 400-4 500 MHz – Methods A (NOC) or C (IMT)

4 500-4 800 MHz – Methods A (NOC) or C (IMT)

4 800-4 990 MHz – Methods A (NOC) or C (IMT)

5 350-5 470 MHz – Method A (NOC) only

5 725-5 850 MHz – Method A (NOC) only

5 925-6 425 MHz – Methods A (NOC) or C (IMT)

Responsible SG/WP: JTG 4-5-6-7

Contributing SG/WP: WP 4A, WP 4B, WP 4C, WP 5A, WP 5B, WP 5C, WP 5D, WP 6A, WP 7B, WP 7C, WP 7D

CEPT Group: CPG-PT D

Background

Agenda Item (AI) 1.1 seeks new additional spectrum allocations for the mobile service on a primary basis, and identification of additional frequency bands for International Mobile Telecommunications (IMT), in accordance with Resolution 233 (WRC-12). This AI is driven by the IMT and mobile broadband industry in response to increasing consumer demand for broadband wireless applications. The majority of International Telecommunication Union (ITU) member administrations share an interest in the development of terrestrial mobile broadband applications. Under this broad-natured AI, multiple NATO military bands are potentially vulnerable to mobile reallocation and/or identification for IMT.

To address this broad-scoped agenda item, ITU-Radiocommunication (ITU-R) Sector established a Joint Task Group across Study Groups (SGs) 4, 5, 6 and 7 (JTG 4-5-6-7) to perform sharing studies and develop Conference Preparatory Meeting (CPM) text. ITU-R Working Party (WP) 5D was responsible for developing IMT spectrum requirements and suitable frequency ranges for the introduction of IMT. Also, WP 5A established suitable frequency ranges for radio local area networks (RLANs) to support broadband expansion.

The final JTG 4-5-6-7 meeting concluded in July 2014. The meeting finalized the draft CPM text including the potential candidate bands for AI 1.1 and elevated several sharing studies for joint approval by the relevant Study Groups (SGs). Other sharing studies not agreed to were maintained as attachments to the JTG chairman's report.

In April 2015, the CPM concluded. CPM produces a report to the WRC containing the results

of ITU-R sharing studies and provides regulatory methods to solve each WRC AI. The final CPM Report text contains favourable methods to solve AI 1.1 for NATO members and there are regulatory solutions provided that enable protection of NATO military equities.

NATO Military Interest

To avoid encroachment into military frequency bands used by NATO.

- **420-450 MHz:** The frequency range 420-450 MHz is an important range for radiolocation applications by military forces. The frequency band 406.1-430 and 440-450 MHz are essential for MOBILE except aeronautical allocation.

NOTE: Although the 420-430 MHz and 440-450 MHz band are allocated to the MOBILE (except aeronautical mobile) service on a primary basis worldwide, Footnote 5.269 allocates the 420-430 MHz and 440-450 MHz bands to the radiolocation service on a primary basis in specified countries, including the UK and US. The 430-440 MHz band is allocated to the radiolocation service on a primary basis worldwide.

- **1 215-1 300 MHz:** NATO military forces rely heavily on radionavigation satellite and radiolocation systems. This band is essential for NATO, specifically for long range and high resolution radars and terrestrial radio relay. NATO nations operate radars using this band as part of the NATO Integrated Air and Missile Defence System which is a cornerstone of NATO air and defence missile policy.
- **1 300-1 400 MHz:** The entire range 1 350-1 400 MHz is essential for NATO and is used for applications in the radiolocation, fixed and mobile services.

The band 1 350-1 375 MHz is used for military applications in the radiolocation service, specifically by long range and high resolution radars, including frequency hopping radars, and up to 1 400 MHz by some countries and in particular for naval radars. NATO nations operate radars using this band as part of the NATO Integrated Air and Missile Defence System (NATINAMDS) which is a cornerstone of NATO air and defence missile policy.

The range 1 350-1 400 MHz is in military use for fixed and mobile services by unmanned systems and terrestrial radio relay (TRR). In order to be able to maintain the vital flexibility needed for the deployment of TRR systems, it is of utmost importance to make maximum use of the complete tuning range 1 350-2 690 MHz of presently used TRR equipment.

- **1 427-1 452 MHz:** The entire band 1 427-1 452 MHz is important for NATO and is used for applications in the fixed and mobile services, specifically terrestrial radio relay; however, future demand will be predominantly for tactical wireless broadband applications. In order to be able to maintain the vital flexibility needed for the deployment of TRR systems, it is of utmost importance to have access to sufficient spectrum portions within the complete tuning range 1 350-2 690 MHz of presently used TRR equipment. NATO relies on the 1 435-1 535 MHz band for aeronautical mobile telemetry to support flight testing of NATO member nation aircraft at test ranges in the United States.

- **1 492-1 525 MHz:** The entire range 1 492-1 525 MHz is important to NATO and is mainly in military use for terrestrial radio relay; however, future demand will be predominantly for tactical wireless broadband applications.

In order to be able to maintain the vital flexibility needed for the deployment of TRR systems, it is of utmost importance to have access to sufficient spectrum portions within the complete tuning range 1 350-2 690 MHz of presently used TRR equipment.

- **2 025-2 110 MHz:** This band is a NATO harmonized military band and heavily utilized for various applications, e.g. Satellite TT&C (E-s), TRR and other mobile applications.
- **2 200-2 290 MHz:** This band is a NATO harmonized military band and heavily utilized for various applications, e.g. Satellite TT&C (s-E), TRR and other mobile applications.
- **2 700-2 900 MHz:** This band is a NATO harmonized military band and heavily utilized for radiolocation. It is also noted that previous experience indicates that out-of-band and spurious emissions from LTE applications could seriously degrade radiolocation services.
- **2 900-3 400 MHz:** This band is a NATO harmonized military band and heavily utilized for radiolocation. It is also noted that previous experience indicates that out-of-band and spurious emissions from LTE applications could seriously degrade radiolocation services.
- **3 400-3 600 MHz:** The 3 400-3 410 MHz band is a NATO harmonized military band and heavily utilized for radiolocation. It is also noted that previous experience indicates that out-of-band and spurious emissions could seriously degrade radiolocation services.
- **4 400-5 000 MHz:** This band is a NATO harmonized military band and heavily utilized for FIXED and MOBILE (including aeronautical) military applications. Many different military systems are currently operating in this band having had to migrate following the release of lower bands in the past notably to accommodate IMT systems and further encroachment could seriously jeopardize NATO military operations.
- **5 350-5 470 & 5 725-5 850 MHz:** The whole band 5 250-5 850 MHz is allocated to the radiolocation service. As reported in EFIS, at the CEPT level, this entire band is used for tactical and weapon system radars, reflecting the NJFA that defines an “essential requirement for land, airborne and naval radars”. Moreover, NATO has also released in 2005 a policy detailing the role and the importance of radiolocation radars that operate normally throughout the full range between 5 250 and 5 850 MHz.

Regional Groups and other International Organisations

REGIONAL TELECOMMUNICATION ORGANIZATIONS

CEPT preliminary position (February 2015)

CEPT supports:

- The results of the ITU-R studies which indicate that by the year 2020, the total spectrum requirement for pre-IMT, IMT-2000 and its enhancements and for IMT-Advanced is between 1960 MHz (for higher user density settings) and 1340 MHz (for lower user density settings). However CEPT recognises that the national spectrum requirements may vary;
- Harmonised allocations to the mobile service and identification for IMT to facilitate the global roaming and reduction of equipment-cost through economies of scale;
- That when considering identification of additional frequency bands for IMT, CEPT takes into account current use of these bands and the results of ECC and/or ITU-R sharing/compatibility studies with respect to existing services in those bands and adjacent bands.

Based on the available studies CEPT is currently of the view that:

The following bands are supported for mobile broadband:

- 1427-1452 MHz
- 1452-1492 MHz
- 1492-1518 MHz
- 3400-3600 MHz
- 3600-3700 MHz
- 3700-3800 MHz

The following bands are not supported for mobile broadband/RLAN:

- 470 - 694 MHz
- 1300-1350 MHz ¹
- 1350-1400 MHz
- 1518-1525 MHz
- 1695-1710 MHz
- 2025-2110 MHz ¹
- 2200-2290 MHz ¹
- 2700-2900 MHz
- 2900-3100 MHz ¹
- 3300-3400 MHz
- 3800-4200 MHz
- 4400-5000 MHz
- 5350-5470 MHz
- 5725-5850 MHz
- 5925-6425 MHz

¹ These bands are not considered as candidate band under Agenda Item 1.1 in the CPM Report.

Taking into account already existing studies, further consideration and sharing/compatibility studies are needed before being able to decide in which bands an allocation to the mobile service or identification to IMT should be made.

In addition CEPT supports the following regulatory provisions for candidate bands:

- Mandatory limits for unwanted emissions in the 1400-1427 MHz band for both mobile terminals and base stations operating in adjacent bands.
- Given that the 1427-1518 MHz is already allocated to mobile service no regulatory constraints shall be adopted by WRC-15 for Region 1 regarding the aeronautical mobile service and land mobile service.
- A pfd limit in Article 21 applicable to the broadcasting satellite service in the band 1452-1492 MHz, with possibility for countries wishing to do so to continue to apply coordination under No. 9.11 (e.g. for protection of specific applications such as aeronautical telemetry). In the band 3400-3800 MHz: the use of the band by the mobile service is subject to agreement obtained under No. 9.21; Articles 9.17 and 9.18 apply; pfd limit at the border of the territory of any other administration; stations of the mobile service shall not claim more protection from space stations than that provided in Table 21 4 of the Radio Regulations.

CITEL (February 2015)

The next CITEL PCC II Meeting is scheduled for August 2015 in Ottawa, Canada. The list below contains the status of proposals as of the February 2015 CITEL PCC II meeting:

Inter-American Proposals:

- 470-694/698 MHz: No Change; Argentina, Brazil, Chile, Dominican Rep., El Salvador, Ecuador, Guatemala, Nicaragua, Panama, Paraguay, Peru, Uruguay, Venezuela
- 1 427-1 518 MHz: Add mobile service; Argentina, Brazil, Canada, Chile, Colombia, Costa Rica, Dominican Republic, El Salvador, Guatemala, Mexico, Nicaragua, Peru, Uruguay, [Venezuela] and USA
- (1 435-1 535 MHz): No change to No. 5.343 (AMT priority in R2); Brazil, Canada, Colombia, Costa Rica, USA and Mexico
- 4 500-4 800 MHz: No Change; Argentina, Bolivia, Brazil, El Salvador, Guatemala, Mexico, Panama, Guatemala, Uruguay, Venezuela and Nicaragua

Draft Inter-American Proposals:

- 410-450 MHz: No Change; USA and Mexico
- 470-694/698 MHz: Add mobile service allocation; Canada, USA and Mexico
- 614-698 MHz: Add mobile service allocation; USA, Canada, Mexico and Colombia
- 1 164-1 215 MHz: No change; USA and Canada
- 1 215-1 300 MHz: No change; USA and Canada
- 1 300-1 400 MHz: No change; USA and Chile
- (1 435-1 535 MHz): Modify No. 5.343 to exclude R2 countries from AMT priority; Canada and Chile
- 1 559-1 610 MHz: No change; USA and Canada
- 2 025-2 110 MHz: No change; USA and Mexico
- 2 200-2 290 MHz: No change; USA and Mexico
- 2 700-2 900 MHz: No change; USA, Chile and Guatemala
- 3 400-3 600 MHz: Add mobile service allocation; Brazil, Colombia, Costa Rica and Ecuador

- 3 600-4 200 MHz: No change; Brazil, Ecuador, Costa Rica and Guatemala
- 3 400-4 200 MHz: No change; Bolivia, El Salvador, Mexico, Panama and Nicaragua
- 5 850-6 425 MHz: No change; Brazil, El Salvador, Mexico, Panama and Nicaragua

Preliminary Proposals:

- 1 350-1 518 MHz: Add mobile service allocation; Brazil
- 4 400-4 990 MHz: No change; USA
- 5 000-5 030 MHz: No change; USA
- 5 350-5 470 MHz: No change; Canada

NATO Military Position

NATO members are urged to ensure the protection of spectrum equities for NATO military systems within the ITU-R technical study process. NATO objects to make new allocations to the mobile service or designation for IMT systems which degrade the operating capabilities of NATO military systems.

NATO does not support new mobile allocations or IMT designations in NATO harmonized bands above 6 GHz. Specific positions regarding potentially targeted frequency bands are as follows:

- **410-450 MHz:** NATO does not support an IMT identification of this range because it is important for radiolocation applications and essential for MOBILE except aeronautical mobile allocation and important for radiolocation applications. For the frequency range 410-450 MHz: There are no ITU-R studies showing compatibility between IMT systems and existing services in the 420-450 MHz frequency range, in particular radiolocation taking into account footnote No. 5.269. Therefore, NATO supports no change to the band 420-450 MHz and no change to No. 5.269.
- **1 215-1 300 MHz:** NATO does not support an allocation to the mobile service or identification for IMT due to its reliance on radionavigation satellite and radiolocation systems. This band is essential for NATO, specifically for long range and high resolution radars. NATO nations operate radars using this band as part of the NATO Integrated Air and Missile Defence System which is a cornerstone of NATO air and defence missile policy.
- **1 300-1 350 MHz:** NATO does not support the band as a candidate band, because it is essential for NATO, specifically for long range and high resolution radars. NATO Nations operate radars using this band as part of the NATO Integrated Air and Missile Defence System which is a cornerstone of NATO air and defence missile policy. Studies indicate that out-of-band and spurious emissions could seriously degrade radiolocation services.
- **1 350-1 400 MHz:** NATO does not support a global allocation to the mobile service or identification for IMT as studies demonstrate incompatibility between incumbent services and IMT. This band is essential for NATO, specifically for long range and high resolution radars, terrestrial radio relays (fixed and mobile) and unmanned systems. NATO Nations operate radars using this band as part of the NATO Integrated Air and Missile Defence System which is a cornerstone of NATO air and missile defence.

- **1 427-1 452 MHz:** NATO does not favour an IMT identification of this NATO harmonised band because studies demonstrate that large separation distances are required between IMT and military systems, in particular fixed and mobile radio relay and unmanned systems. Future military demand in this band will be predominantly for tactical wireless broadband applications. These military usages should be taken into account prior to any decision to introduce IMT in this band. NATO supports retaining the priority for Aeronautical Mobile Telemetry (AMT) over other mobile services in Region 2 only, provided by Footnote 5.343 in the band 1 435-1 535 MHz. NATO requires appropriate protection of incumbent military systems.
- **1 452-1 492 MHz:** NATO supports an IMT identification in this band in Region 1, providing that studies show that there is no impact to NATO systems in adjacent bands. NATO also supports retaining the priority for Aeronautical Mobile Telemetry (AMT) over other mobile services in Region 2 only, provided by Footnote 5.343 in the band 1 435-1 535 MHz.
- **1 492-1 518 MHz:** NATO does not favour an IMT identification of this NATO harmonised band because studies demonstrate that large separation distances are required between IMT and military systems, in particular fixed and mobile radio relay and unmanned systems.
Future military demand in this band will be predominantly for tactical wireless broadband applications. These military usages should be taken into account prior to any decision to introduce IMT in this band.
NATO supports retaining the priority for Aeronautical Mobile Telemetry (AMT) over other mobile services in Region 2 only, provided by Footnote 5.343 in the band 1 435-1 535 MHz.
NATO requires appropriate protection of incumbent military systems.
- **1 518-1 525 MHz:** NATO does not support an IMT identification of this band because there is a NATO harmonised military utilization, presently still for TRR; however, future demand will be predominantly for tactical wireless broadband applications. NATO does support retaining the priority for Aeronautical Mobile Telemetry (AMT) over other mobile services in Region 2 only, provided by Footnote 5.343 in the band 1 435-1 535 MHz.
- **1 559-1 610 MHz:** NATO does not support an allocation to the mobile service or identification for IMT due to its reliance on radionavigation satellite and radiolocation systems.
- **1 695-1 700 MHz:** NATO does not support an allocation to the mobile service in this band due to military utilization in certain geographical areas.
- **2 025-2 110 MHz:** NATO does not support an IMT identification in these bands because there is an essential NATO harmonised military utilization especially for tactical radio relay and unmanned systems. Moreover, ITU-R studies show that sharing between the existing space operation, space research, earth exploration satellite services, and IMT in these is bands is not feasible.

- **2 200-2 290 MHz:** NATO does not support an IMT identification in these bands because there is an essential NATO harmonised military utilization especially for tactical radio relay and unmanned systems. Moreover, ITU-R studies show that sharing between the existing space operation, space research, earth exploration satellite services, and IMT in these is bands is not feasible.
- **2 700-2 900 MHz:** NATO does not support an allocation to the mobile service because it is a NATO harmonised military band and heavily utilized for radiolocation. It is also noted that studies indicate that mobile service cannot be operated co-channel, co-coverage with radio determination service. Previous experience and studies indicate that out of band and spurious emissions from the adjacent band could seriously degrade radiolocation services.
- **2 900-3 400 MHz:** NATO does not support an allocation to the mobile service because it is a NATO harmonised military band and heavily utilized for radiolocation. It is also noted that previous experience and a study indicate that out-of-band and spurious emissions could seriously degrade radiolocation services.
- **3 400-3 800 MHz:** NATO recognizes the provisions of FN 5.430A of the Radio Regulations and that ECC has updated the framework for the use of this band to respond to the requirement of future usage of IMT systems with larger bandwidth in this frequency band (ECC/DEC(11)06). NATO also recognises the adoption by the EU of the EC DEC 2014/276/EU. It should be noted that NATO relies on operating airborne radiolocation systems in the band 3 400-3 410 MHz on a secondary basis. The lower Radiolocation band 2 900-3 400 MHz needs protection from IMT out-of-band and spurious emissions that could seriously degrade the radiolocation services. NATO recognises that in Region 2, the band 3 400-3 600 MHz is allocated to the Radiolocation service and this is an important service for military uses.
- **3 800-4 200 MHz:** NATO highlights the significance of this band to the Alliance due to the importance of the military use of the commercial services (FSS).
- **4 400-5 000 MHz:** NATO does not support the band as a candidate band because it is an essential NATO harmonised military band and heavily utilized for FIXED and MOBILE (including aeronautical) military applications. Many different military systems are currently operating in this band having had to migrate following the release of lower bands in the past notably to accommodate IMT systems and further encroachment could seriously jeopardize NATO military operations.
- **5 350-5 470 MHz:** NATO does not support a mobile service allocation or identification for IMT/RLAN in the 5350-5470 MHz band at this time because no techniques have yet been proven or demonstrated to mitigate potential interference to radars in the band. This band is essential for NATO-wide radiolocation utilization including frequency hopping radars. Further study is required to determine the efficacy of potential mitigation measures.
- **5 725-5 850 MHz:** NATO does not support a mobile service allocation or identification for IMT/RLAN in the 5725-5850 MHz band at this time because no techniques have yet been proven or demonstrated to mitigate potential interference to radars in the band. This band is essential for NATO-wide radiolocation utilization including frequency hopping radars further study is required to determine the efficacy of potential mitigation measures.

- **5 850-5 925 MHz:** NATO does not support an IMT identification of this band unless essential military spectrum usage is adequately safeguarded. Previous studies indicate that out-of-band and spurious emissions could seriously degrade radiolocation services below 5850 MHz.
- **5 925-6 425 MHz:** NATO highlights the significance of this band to the Alliance due to the importance of the military use of the commercial services (FSS).

Military Importance HIGH

Agenda Item 1.3

to review and revise Resolution **646 (Rev.WRC-12)** for broadband public protection and disaster relief (PPDR), in accordance with Resolution **648 (WRC-12)**.

Military Importance MEDIUM

Issue

Resolution **648 (WRC-12)**

Studies to support broadband public protection and disaster relief
resolves to invite WRC 15

to consider the studies in invites ITU R below on broadband PPDR and take appropriate action with regard to revision of Resolution **646 (Rev.WRC-12)**,
invites ITU R

to study technical and operational issues relating to broadband PPDR and its further development, and to develop recommendations, as required, on:

- technical requirements for PPDR services and applications;
- the evolution of broadband PPDR through advances in technology;
- the needs of developing countries.

Frequency Range/Bands:

Resolution 646:

Region 1: 380-470 MHz

Region 2: 380-400 MHz (Venezuela), 746-869 MHz,
4 940-4 990 MHz

Region 3: 380-400 MHz, 406.1-430 MHz, 440-470 MHz,
746-806 MHz, 806-824 MHz, 851-869 MHz,
4 940-4 990 MHz, 5 850-5 925 MHz

Responsible SG/WP: WP 5A

Contributing SG/WP: WP 5B, WP 5C, WP 5D

CEPT Group: CPG-PT A

Background

WRC-15 Agenda Item 1.3 invites ITU-R to continue its technical studies and to make recommendations concerning technical and operational implementation, as necessary, for advanced solutions to meet the needs of public protection and disaster relief radiocommunication applications, taking into account the capabilities, evolution and any resulting transition requirements of the existing systems, particularly those of many developing countries, for national and international operations.

One objective within this Agenda item is to collect information on regional available frequency ranges in order to identify those able to be used on a worldwide basis. This is independent from the type of radiocommunication PPDR application, such as narrowband usage. Another is the request of Res. 648 to study in particular the development of broadband PPDR applications and their requirements, which includes a review of the

available frequency ranges in Res. 646 regarding the usability for broadband PPDR. For this reason some regional bodies in the world, e.g. CEPT in Europe, started activities to identify spectrum requirements and evaluate suitable bands for regionally harmonisation of spectrum in support of broadband PPDR communications.

LTE technology can meet the broadband requirements of PPDR organisations best.

Taking into account this, Agenda Item 1.3 should be seen also in the context of the activities of Agenda Item 1.2, because of discussions on the frequency band 694-790 MHz under both Agenda Items.

Regionally or internationally harmonized frequency bands for broadband PPDR would have significant benefits, like economies of scale and lower costs for specialized systems and interoperability on a regional and worldwide basis.

Additionally, some NATO nations have identified new spectrum demands for military wireless broadband applications, which could also be fulfilled by LTE technology. Using the same technology and frequency bands as PPDR might be advantageous in respect of procurement costs and interoperability.

NATO Military Interest

The protection of military bands from encroachment.

In case of designation of spectrum within the frequency band 694 to 790 MHz for PPDR purposes, provided that this band will be allocated to the mobile service under Agenda item 1.2, sharing with future military mobile broadband applications should be considered.

Regional Groups and other International Organisations

CEPT (CPG February 2015)

Europe supported the studies on the revision of Resolution 646 (Rev.WRC-12) in accordance with Resolution 648 (WRC-12) covered by related work of ITU-R Working Party 5A establishing Report ITU-R M.[PPDR].

Europe is of the view that Report ITU-R M.[PPDR] fully addresses requirements of PPDR operations, as invited by Resolution 648 (WRC-12).

Europe is furthermore of the view, that any action at WRC-15 needs to reflect that PPDR related radiocommunication matters are an issue of sovereignty of the member states, and that PPDR requirements may vary to a significant extent from country to country. Therefore Europe will consider future harmonization of PPDR only, if the action is flexible enough to consider different national circumstances such as the PPDR scenarios, the amount of available spectrum and the type of network which may be a dedicated, a commercial or a hybrid solution.

CITEL (October 2014)

Draft Inter-American Proposal

MOD Res. 646: Canada, Brazil, Mexico, Uruguay and Chile

RCC (December 2013)

The RCC Administrations support the use of IMT family standards for the purpose of building public protection and disaster relief networks in the frequency bands earlier identified for PPDR, but allocation of certain new frequency bands to MS to provide operation of these systems is not supported.

The RCC Administrations consider that spectrum requirements for broadband PPDR applications should be identified taking into account the intended use of the IMT standard family.

The RCC Administrations recognize that requirements for PPDR systems such as the volume of available and used spectrum, applicable scenarios of PPDR use, could substantially vary depending on the country's national interests.

SFCG (June 2014)

SFCG supports the protection of existing space science service allocations. No additional identification of spectrum to support PPDR should be made in space science service bands unless acceptable sharing criteria are developed. SFCG should monitor the evolution of the agenda item in order to avoid PPDR identification immediately above 406.1 MHz (noting the connection with AI 9.1.1).

WMO (March 2014)

WMO is of the view that regulations for PPDR should not impact on the operation of meteorological systems.

ESA (September 2014)

Supports SFCG positions

EUMETNET (September 2014)

Supports WMO positions

EBU (January 2015)

EBU considers that PPDR applications should be accommodated within spectrum already allocated to mobile Services.

EBU does not support the identification of parts of the band 694-790 MHz explicitly to PPDR applications. In case of PPDR deployments, there might be significant risk of harmful interference to broadcasting services. Broadcasting services might require additional technical constraints in order to protect PPDR applications on a national or international basis.

NATO Military Position

NATO supports the review and revision of Resolution 646, taking into account that military access to radio spectrum will not be constrained.

In Region 1 NATO opposes any new identification of broadband PPDR spectrum in the band 380 MHz to 400 MHz. The implementation of advanced technology in the bands 380-385 MHz and 390-395 MHz should take into consideration the impact of the out-of-band emission into the adjacent bands by a recommendation in accordance with Resolution 648.

In Region 2 NATO opposes any new identification of broadband PPDR spectrum in the bands 380-470 MHz and 5 850-5 925 MHz.

Military Importance MEDIUM

Agenda Item 1.4

to consider possible new allocation to the amateur service on a secondary basis within the band 5 250-5 450 kHz in accordance with Resolution **649 (WRC-12)**.

Military Importance HIGH

Issue

Resolution **649 (WRC-12)**

Possible allocation to the amateur service on a secondary basis at around 5 300 kHz
resolves to invite WRC 15

to consider, based on the results of the ITU R studies referred to in invites ITU R below, the possibility of making an allocation of an appropriate amount of spectrum, not necessarily contiguous, to the amateur service on a secondary basis within the band 5 250-5 450 kHz, invites ITU R

- 1 to study spectrum requirements for a secondary allocation to the amateur service within the band 5 250-5 450 kHz;
- 2 to carry out sharing studies on the impact to other services currently allocated in the band referred to in invites ITU R 1 and in the adjacent bands;
- 3 to complete studies in time for WRC 15.

Frequency Range/Bands: 5 250-5 450 kHz

Responsible SG/WP: WP 5A

Contributing SG/WP: WP 5B, WP 5C

CEPT Group: CPG-PT C

Background

This Agenda Item is seeking a secondary allocation to the Amateur service. This agenda item was initiated by Cuba and the Amateur community seeking a possible new allocation to the amateur service on a secondary basis, within the frequency band 5 250-5 450 kHz. This will adequately satisfy Cuba's needs for providing disaster relief communications.

During the last 3 WRC, military interest was already to protect HF bands from amateur service allocation as compatibility between amateur service and the tactical HF utilisation was not demonstrated.

Methods from the final CPM Report to WRC-15

Method A:

An allocation to the ARS (Amateur service), on a secondary basis, for one or more blocks of spectrum (not necessarily contiguous) in the range 5 275 kHz to 5 450 kHz.

- Method A1

An allocation to the ARS, on a secondary basis in the frequency band, 5 275-5 450 kHz.

- Method A2

An allocation to the ARS, on a secondary basis in the range 5 350 to 5 450 kHz.

- Method A3

- Option 1: An allocation to the ARS up to [xx] kHz, on a secondary basis, in the range 5 275 kHz to 5 450 kHz.
- Option 2: An allocation to the ARS up to 15 kHz, on a secondary basis, in the range 5 275 kHz to 5 450 kHz.

- Method A4

An allocation to the ARS at several specific channels, on a secondary basis, in the range 5 275 kHz to 5 450 kHz.

Method B:

No changes to Frequency Allocation Table of Radio Regulations in the frequency band 5 250-5 450 kHz.

NATO Military Interest

The frequency range 5 250-5 450 MHz is an important part of the range 1 606.5 kHz-30 005 MHz which is an essential harmonized class A NATO band. It is in military use for:

- wideband telegraphy & data channels
- naval communications
- fixed and tactical communications
- radiolocation

The frequency band 5 250-5 450 MHz also includes a set of frequencies which are part of the NATO HF pool.

It should be noted that the military applications in the fixed and mobile service are already suppressed by radiolocation in 5 250-5 275 kHz, the same would happen by sharing with the amateur service due to frequency occupation. Amateur service would bring a higher channel occupation in the already limited exclusive fixed and mobile allocation subbands in 5 MHz.

Regional Groups and other International Organisations

PRELIMINARY CEPT POSITION (CPG, February 2015)

CEPT supports a secondary allocation to the amateur service in the band 5 350-5 450 MHz.

CITEL (April 2015)

INTER-AMERICAN PROPOSAL FOR WRC-15 (Discussions have not ended)

Support of a secondary allocation to the Amateur Service in the band 5 275-5 450 MHz:

Argentina, Brazil, Chile, Costa Rica, Dominican Republic, El Salvador, Nicaragua, Panama, Uruguay and Venezuela

Asia Pacific Telecommunity (APT, Preliminary Views February 2015)

APT Members are of the view that:

- the protection of the services to which the band is currently allocated and their future development should be ensured, through appropriate technical, operational and regulatory measures, where required. No constraints and adverse impact should also be imposed upon existing services and their future development in the frequency band 5 250-5 450 kHz.
- the frequency band 5 250-5 275 kHz should be excluded from any method to satisfy the

agenda item;

- sharing may only be feasible with some technical and operational limits on the amateur service.

Other Views - Some APT Members are of the view that:

- a secondary allocation to the amateur service could be made in some parts of the frequency band 5 275-5 450 kHz;

- to ensure protection of existing primary services, certain operational constraints on the amateur stations should be considered, such as e.g., amateur stations shall not exceed certain maximum equivalent isotropically radiated power (e.i.r.p.) and shall not initiate transmissions before confirming the expected operating channels in the frequency band 5 275-5 450 kHz is not occupied by existing primary services.

Regional Commonwealth in the field of Communications (RCC, April 2015)

The RCC Administrations oppose to allocation of the frequency band 5 250-5 450 kHz or part of this band to the amateur service on the secondary basis, due to its intense use by fixed / land mobile services and oceanographic radars, as well as unacceptable interference from amateur stations to the existing systems that is confirmed by the results of the ITU-R studies.

NATO Military Position

NATO does not favour a worldwide secondary allocation to the Amateur service within the 5 250-5 450 kHz band.

Military Importance HIGH

Agenda Item 1.5

to consider the use of frequency bands allocated to the fixed-satellite service not subject to Appendices 30, 30A and 30B for the control and non-payload communications of unmanned aircraft systems (UAS) in non-segregated airspaces, in accordance with Resolution **153 (WRC-12)**.

Military Importance HIGH

Issue

Resolution 153 (WRC-12)

Consideration of the fixed-satellite service for the control and non-payload communications of unmanned aircraft systems (UAS) in non-segregated airspaces

resolves to invite WRC 15

to consider, based on the results of the ITU R studies referred to in invites ITU R below, the possible regulatory actions to support the use of FSS frequency bands for the UAS CNPC links, as mentioned in the considerings, ensuring the safe operation of UAS CNPC links, consistent with recognizing e), (=that, pursuant to No. 4.10 of the Radio Regulations, Member States recognize that the safety aspects of radionavigation and other safety services require special measures to ensure their freedom from harmful interference; it is necessary therefore to take this factor into account in the assignment and use of frequencies)

invites ITU R

- 1 to conduct, in time for WRC 15, the necessary studies leading to technical, regulatory and operational recommendations to the Conference, enabling that Conference to decide on the usage of FSS for the CNPC links for the operation of UAS;
- 2 to include, in the studies referred to in invites ITU R 1, sharing and compatibility studies with services already having allocations in those bands;
- 3 to take into account information from operations referred to in considering e). (that UAS already operate in fixed-satellite service (FSS) frequency bands for the UA-to-satellite CNPC links under No. 4.4 of the Radio Regulations).

Frequency Range/Bands: Frequency bands allocated to the FSS in the ranges 10.95-14.5 GHz (Ku-Band) and 17.3-30 GHz (Ka-Band).

Responsible SG/WP: WP 5B

Contributing SG/WP: WP 4A, WP 4B

CEPT Group: CPG-PT C

Background

Report ITU-R M.2171 identified the spectrum requirements for unmanned aircraft (UA) command and non-payload communication (CNPC) that would be needed to support flight through non-segregated airspace. Those requirements identified the need for both line of sight (LOS) and beyond line of sight (BLOS) spectrum. While the LOS requirements were addressed at the last World Radiocommunication Conference held in 2012 the BLOS requirements were only partially addressed. Agenda item 1.5 was therefore established to

investigate whether fixed-satellite service (FSS) networks, not subject to Appendix 30, 30A and 30B could be used to provide additional capacity for UA CNPC links.

In the context of this agenda item, an unmanned aircraft system (UAS) consist of a geostationary satellite operated in FSS frequency bands, an UA with an earth station on board to interconnect the communication link between this UA and associated remote earth station, called "unmanned aircraft control station" (UACS). UA are aircraft that do not carry a human pilot but that are piloted remotely, i.e. through a reliable communication link from outside the aircraft. UAS operations up to now have been limited to segregated airspace using FSS links under RR No. 4.4. However, it is planned to expand UAS deployment outside of segregated airspace.

There are a variety of existing and envisioned applications of UAS in the fields of economy, public safety and science. Further details on UAS applications in non-segregated airspace can be found in Report ITU-R M.2171. The operation of UA outside segregated airspace requires addressing the same issues as manned aircraft, namely safe and efficient integration into the air traffic control system.

At CPM two methods to address the agenda item are proposed.

One method (Method A) is proposed that is intended through a footnote and associated resolution to identify the conditions under which systems operating in the FSS could provide UA CNPC links.

A no change method (Method B) is also proposed on the basis of concerns about the ability of FSS to provide a safety service. There are technical, operational and regulatory obstacles for the use of FSS for UAS CNPC links. Moreover, existing allocations for AMS(R)S as well as AMSS and MSS, under certain conditions could satisfy the requirements for UAS CNPC in the frequency bands of these services.

NATO Military Interest

High Interest due to Mil UAS use. NATO initiates the Alliance Ground Surveillance (AGS) program to build a capacity for battlefield reconnaissance and surveillance using the unmanned aircraft type RQ-4B Global Hawk.

In addition the defence plan of some NATO member state provides the procurement of unmanned aircraft systems. This reduces the mission planning effort necessary to get access to the non-segregated airspace.

The AGS system is expected to be acquired by 15 Allies (Bulgaria, Czech Republic, Denmark, Estonia, Germany, Italy, Latvia, Lithuania, Luxembourg, Norway, Poland, Romania, Slovakia, Slovenia and the United States) and will be made available to the Alliance in the 2017-2018 timeframe. This key transatlantic procurement programme is in execution after the 15 acquisition nations signed the procurement contract at the Chicago Summit in May 2012.

The NATO-owned and -operated AGS core capability will enable the Alliance to perform persistent surveillance over wide areas from high-altitude, long-endurance, unmanned aerial platforms operating at considerable stand-off distances and in any weather or light condition. Using advanced radar sensors, these systems will continuously detect and track moving objects throughout observed areas and will provide radar imagery of areas of interest and stationary objects.

The main operating base for AGS will be located at Sigonella Air Base in Italy, which will serve a dual purpose as a NATO Joint Intelligence, Surveillance & Reconnaissance (JISR) deployment base and data exploitation and training centre.

Regional Groups and other International Organisations

Preliminary CEPT position (CPG February 2015)

CEPT supports continuing the necessary studies leading to technical, regulatory and operational recommendations to WRC-15, as invited by Resolution 153 (WRC-12), enabling the Conference to decide on the usage of FSS for the CNPC links for the safe operation of UAS in non-segregated airspace.

CEPT is of the view that in the absence of information from ICAO as to their requirements a parametric approach to the studies is the best that can be achieved.

CITEL (November 2014)

Preliminary views:

CAN:

Support use of FSS bands not subject to App 30, 30A, 30B for UAS control and non-payload communications in non-segregated airspaces only if ITU-R studies show it's possible to provide safe and efficient integration into the ATC system.

USA:

ADD footnote 5.XXX in most FSS bands from 10-30 GHz to allow for control and non-payload communication (CNPC) of unmanned aircraft systems.

ADD Resolution specifying regulatory and operational procedures.

ICAO (July 2013 and 2015(draft))

The following position from 2013 and the new draft position (to be approved on ICAO Convention in June 2015) have been taken from info document "CPG PTC(15)INFO 16" originated by ICAO:

Unmanned aircraft systems (UAS) have great potential for innovative civil applications, provided that their operation does not introduce risks to the safety of life.

Taking into account Recommendations 1/12 and 1/13 of the Twelfth Air Navigation Conference (November 2012) "That ICAO ... develop and implement a comprehensive aviation frequency spectrum strategy ... which includes the following objectives: ... clearly state in the strategy the need for aeronautical systems to operate in spectrum allocated to an appropriate aeronautical safety service"; and "That ICAO support studies in the International Telecommunication Union Radio Communication Sector (ITU-R) to determine what ITU regulatory actions are required to enable use of frequency bands allocated to the fixed satellite service for remotely piloted aircraft system command and control (C2) links to ensure consistency with ICAO technical and regulatory requirements for a safety service.", in order to support the use of FSS systems for UAS CNPC links in non-segregated airspace, the technical and regulatory actions identified by studies under Resolution 153 (WRC-12) must be consistent with the above Recommendations, and satisfy the following conditions:

1. That the technical and regulatory actions should be limited to the case of UAS using satellites, as studied, and not set a precedent that puts other aeronautical safety services at risk.

2. That all frequency bands which carry aeronautical safety communications need to be clearly identified in the Radio Regulations.

3. That the assignments and use of the relevant frequency bands have to be consistent with article 4.10 of the Radio Regulations which recognizes that safety services require special measures to ensure their freedom from harmful interference.

4. Knowledge that any assignment operating in those frequency bands:

is in conformity with technical criteria of the Radio Regulations,

has been successfully co-ordinated, including cases where co-ordination was not completed but the ITU examination of probability of harmful interference resulted in a favourable finding, or any caveats placed on that assignment have been addressed and resolved such that the assignment is able to satisfy the requirements to provide BLOS communications for UAS;

and has been recorded in the International Master Frequency Register.

5. That interference to systems is reported in a transparent manner and addressed in the appropriate timescale.
6. That realistic worst case conditions, including an appropriate safety margin, can be applied during compatibility studies.
7. That any operational considerations for UAS will be handled in ICAO and not in the ITU.

ICAO (Draft update 2015 to be approved on ICAO Convention in June 2015):

Recognizing that unmanned aircraft systems (UAS) have great potential for innovative civil applications, provided that their operation does not introduce risks to the safety of life, and taking into account the Twelfth Air Navigation Conference (November 2012) Recommendation 1/12 and Recommendation 1/13 as amended by the 38th Assembly, to ensure that in order to support the use of FSS systems for UAS CNPC links in non-segregated airspace, the technical and regulatory actions identified by studies under Resolution 153 (WRC-12) be consistent with the above Recommendations and satisfy the following conditions:

1. That the technical and regulatory actions be limited to the case of UAS using satellites, as studied, and not set a precedent that puts other aeronautical safety services at risk.
2. That all frequency bands which carry aeronautical safety communications be clearly identified in the ITU Radio Regulations.
3. That the assignments and use of the relevant frequency bands be consistent with article 4.10 of the ITU Radio Regulations which recognizes that safety services require special measures to ensure their freedom from harmful interference.

Additional conditions will need to be addressed in ICAO SARPS for UAS CNPC, and not in ITU.

APT (APG15-3, 9 - 13 June 2014)

Support ITU-R studies. The compatibility between UAS CNPC links and incumbent systems in related bands should be ensured.

Satellite command and control links should comply with accepted safety requirements, including ICAO Standards and Recommended Practices (SARPs) when developed.

Any regulation relating to UAS operation in FSS bands should prevent an adverse impact on existing and future satellite networks of the FSS and other services in the same band without compromising relevant ICAO Standards and Recommended Practices (SARPs). Clear identification of globally harmonized spectrum for UAS CNPC links is preferred so that the current practice of licensing of manned aircraft following the ICAO standards can be extended to unmanned aircraft.

All studies relating to the supporting Document towards preliminary draft new Report should be duly completed and adopted by ITU-R Study Groups before WRC-15.

All technical, operational, regulatory issues referred to above should be properly addressed. Performance availability and service availability requirements to ensure safety aspects of the UAS CNPC and to conform to the very high degree of reliability required for such operation are yet to be established.

Some Administrations support method A and some Administrations support method B. A third group of Members remain open to other Methods that might be developed to satisfy this Agenda item which is again not supported by other APT Members.

ATU (January 2014)

To support continuation of ongoing studies, and the position to be taken after the outcome of studies.

ASMG (November 2014)

ASMG supports No change to RR "Method B".

ASMG in the view that there are considerable technical, operational and regulatory obstacles for the use of FSS for UAS CNPC links. Moreover, existing allocations for AMS(R)S as well as AMSS and MSS, under certain conditions could satisfy the requirements for UAS CNPC in the frequency bands of these services.

RCC (22 December 2013)

The RCC Administrations consider that the use of unplanned FSS allocations by satellite component of UAS CNPC links shall not impose additional constraints on the use of these bands by existing and future FSS and other primary service systems and shall provide the existing level of protection for these systems.

The RCC Administrations consider that the use of unplanned FSS allocations for operation of satellite component of UAS CNPC links shall be harmonized in all three Regions.

SFCG (June 2014)

SFCG supports the protection of existing space science service allocations while recognizing the practical requirement of UAS CNPC links, in particular for beyond line of sight operations (BLOS), in FSS bands. There is a secondary SRS allocation in the band 13.75-14 GHz (primary status with respect to FSS systems for some GSO SRS networks for which API has been received prior to a certain date). No changes to the FSS allocation in the 13.75-14 GHz band should be made unless acceptable sharing criteria are developed with the SRS. Although it can be assumed that the focus will be more on FSS Ku and Ka bands, the SFCG also seeks to ensure that this item will not lead to authorising UAS in the FSS X-band allocations shared with EESS and METSAT. SFCG also supports the protection of secondary SRS allocations in 14-14.3 GHz and 14.4-14.47 GHz bands. Finally, any use of FSS bands for UAS CNPC links in 18.6-18.8 GHz band must meet the provisions of RR Nos. 5.522A and 5.522B.

WMO (December 2014)

WMO is concerned with the frequency band 8 025-8 400 MHz allocated on a primary basis to EESS (space-to-Earth) and to FSS (Earth-to-space) and will object to the use of the 8 GHz FSS allocation for the CNPC links for the operation of UAS. WMO also considers that the protection of existing allocations to the Earth exploration-satellite service and other services employed by meteorological applications shall be ensured if WRC-15 decides on the usage of FSS for the CNPC links for the operation of UAS Regional organisations.

CRAF (April 2013)

CRAF supports the protection of existing RAS allocations. No changes should be made to the RR unless acceptable sharing criteria are developed with the RAS and SRS.

ESA (September 2014)

Supports SFCG positions

EUMETSAT (September 2014)

Supports WMO positions

NATO Military Position

NATO supports all regulatory action which permits the usage of FSS bands for UAS CNPC links provided that ITU-R studies show that FSS can be used for CNPC in non-segregated airspace without constraining any incumbent services including typical FSS operation, or other military systems.

Military Importance HIGH

Agenda Item 1.6.1

to consider possible additional primary allocations to the fixed-satellite service (Earth-to-space and space-to-Earth) of 250 MHz in the range between 10 GHz and 17 GHz in Region 1;
and review the regulatory provisions on the current allocations to the fixed-satellite service within each range, taking into account the results of ITU R studies, in accordance with Resolutions **151 (WRC 12)** and **152 (WRC 12)**, respectively;

Military Importance HIGH

Issue

Resolution 151 (WRC 12)

Additional primary allocations to the fixed-satellite service in frequency bands between 10 and 17 GHz in Region 1

resolves

1. to complete, for WRC-15:

i) studies of possible bands for a new primary allocation to the fixed-satellite service of 250 MHz in both directions in Region 1 within the bands 10-17 GHz, with particular focus on the frequency range that is contiguous (or near contiguous) to the existing fixed-satellite service allocations, taking into account sharing and compatibility studies, while protecting the existing primary services in the band(s);

ii) studies that include consideration of utilizing existing allocations to the fixed-satellite service in both directions through a review of regulatory provisions, except for Nos. 5.502 and 5.503 and Resolution 144 (Rev.WRC-07), taking into account sharing and compatibility studies, while protecting the existing primary services in the band 10-17 GHz;

2 that if consideration is given to use of the 14.5-14.8 GHz band, appropriate measures need to be taken with regard to the Appendix 30A Plan and List, as the case may be, to ensure the integrity and adequate protection of these bands, specifically taking into account:

i) required coordination procedures between Appendix 30A networks, as the case may be, and the new fixed-satellite service utilization of the bands;

ii) the need for transmitting earth stations in the Appendix 30A Plan and List to be able to be located anywhere within their respective service areas;

iii) the need to appropriately protect assignments in the Appendix 30A Plan and List, as the case may be, from any new fixed-satellite service utilization of the bands;

3 that the 11.7-12.5 GHz band should be excluded from consideration; however, if consideration is given to use of the 11.7-12.5 GHz band in Region 1, appropriate measures need to be taken with regard to the Appendix 30 Plans and List, according to the case, to ensure the integrity and full protection of these bands, specifically taking into account:

i) required coordination procedures between Appendix 30 networks, as the case may be, and the new fixed-satellite service utilization of the bands;

ii) the need for receiving earth stations in the Appendix 30 Plans and List to be able to be located anywhere within their respective service areas;

iii) the need to appropriately protect assignments in the Appendix 30 Plans and List, as the case may be, from any new fixed-satellite service utilization of the bands;

4 that the 12.75-13.25 GHz band shall be excluded from the studies referred to in this Resolution;

5 that WRC-15 consider the results of the above studies and take appropriate action, invites ITU-R to conduct studies, as a matter of urgency, on technical (including necessary calculations and criteria), operational and regulatory issues on this topic, taking into account

resolves 1, 2, 3 and 4, in time for WRC-15 to consider the results of these studies and take appropriate action invites administrations to participate in the ITU-R studies through the submission of contributions.

Frequency Range/Bands:	8.5-10.5 GHz Type 2 RLS 13.4-14 GHz (primary) 14.62-15.23 GHz Type 1 Fixed/Mobile (primary) 15.7-17.3 GHz Type 1 RLS (primary)
Responsible SG/WP:	WP 4A
Contributing SG/WP:	WP 4C, WP 5A, WP 5B, WP 5C, WP 7B, WP 7C, WP 7D, (WP 3M, WP 6B)
CEPT Group:	CPG-PT B

Background

FSS uplink allocations in Region 2 are unbalanced by 250 MHz and Region 3 is unbalanced by 300 MHz. The objective is to balance FSS uplink and downlink spectrum for a total of 1 GHz. The Region 1 proposal intends to find an additional 250 MHz in both uplinks and downlinks to maintain the current balance while increasing its total allocations to match the other two regions.

NATO Military Interest

The 14.62-15.23 GHz frequency band is a NATO harmonized band used for implementing STANAG 7085 equipment. STANAG 7085 is a NATO standard for aeronautical wide bandwidth data links. The Alliance Ground Surveillance (AGS) programme is one system implementing STANAG 7085. Fifteen allies (Bulgaria, Czech Republic, Denmark, Estonia, Germany, Italy, Latvia, Lithuania, Luxembourg, Norway, Poland, Romania, Slovakia, Slovenia and the United States) are acquiring the AGS system (High Altitude Long Endurance UAV), which will be available to the Alliance in the 2017-2018 timeframe.

The majority of allies will provide financial contributions to development and sustainment of the AGS programme but all will benefit from AGS capabilities in support of NATO operations.

Additionally, this range contains critical NATO satellite communication, unmanned aircraft systems, and advanced military radar systems.

Regional Groups and other International Organisations

CEPT CPG (February 2015)

Draft European Common Proposal (DECP):

Current options applicable to 1.6.1:

- 1 ADD FSS downlinks in the 13.4-13.65 GHz frequency range
- 2 OR ADD FSS downlinks in the 14.8-15.1 GHz frequency range
- 3 ADD FSS uplinks in the 14.5-14.75 GHz frequency range (same as 1.6.2 proposal)
- 4 No change to the Radio Regulations

Statement by Lithuania, Poland, Germany, Switzerland and France:

“The stating Administrations reiterate their opposition to the allocation of the band 14.5-15.35 GHz to the FSS because of its intensive usage by terrestrial services. Moreover, they emphasize that the band 14.62-15.23 GHz is a harmonized NATO band. In addition to sharing difficulties, these Administrations finally question the actual availability of this spectrum for the FSS in Europe.”

CITEL (February 2015)

Draft Inter-American Proposal (AI 1.6.2 only)

MOD RR – add FSS uplinks in 14.5-14.8 GHz; Canada and Brazil

United States proposal AI 1.6.1 (NEW as of May 2015):

No change to the RR in the 13.25-13.75 GHz, 14.5-15.35 GHz and 15.4-17.1 GHz frequency ranges.

NATO Military Position

NATO does not support additional allocations to the FSS in the bands 10.0-10.5 GHz and 13.25-17.0 GHz, in particular the band 14.62-15.23 GHz which is NATO harmonised for Fixed and Mobile applications (including aeronautical), unless technical studies show compatibility between FSS and existing primary services. Recognizing resolves 4 of Resolution 151 (WRC-12), NATO supports focusing ITU-R studies in the frequency range 10.5-10.7 GHz and 11.7-12.5 GHz.

Military Importance HIGH

Agenda Item 1.6.2

to consider possible additional primary allocations to the fixed-satellite service (Earth-to-space) of 250 MHz in Region 2 and 300 MHz in Region 3 within the range 13-17 GHz; and review the regulatory provisions on the current allocations to the fixed-satellite service within each range, taking into account the results of ITU R studies, in accordance with Resolutions **151 (WRC 12)** and **152 (WRC-12)**, respectively.

Military Importance HIGH**Issue****Resolution 152 (WRC 12)**

Additional primary allocations to the fixed-satellite service in the Earth to space direction in frequency bands between 13-17 GHz in Region 2 and Region 3

resolves

- 1 to complete, for WRC 15:
 - i studies of possible bands for a new primary allocation to the fixed-satellite service in the Earth-to-space direction of 250 MHz in Region 2 and 300 MHz in Region 3 within the bands 13-17 GHz, with particular focus on the frequency range that is contiguous (or near contiguous) to the existing fixed-satellite service allocations, taking into account sharing and compatibility studies, while protecting the existing primary services in the band(s);
 - ii studies that include consideration of utilizing existing allocations to the fixed-satellite service in the Earth-to-space direction through a review of regulatory provisions, except for Nos. **5.502** and **5.503** and Resolution 144 (Rev. WRC 07), taking into account sharing and compatibility studies, while protecting the existing primary services in the band(s);
- 2 that if consideration is given to use of the 14.5-14.8 GHz band, appropriate measures need to be taken with regard to the Appendix **30A** Plan and List, as the case may be, to ensure the integrity and full protection of these bands, specifically taking into account: ... (see Res. 151);
- 3 that the 13-13.25 GHz band shall be excluded from the studies referred to in this Resolution;
- 4 that WRC 15 consider the results of the above studies and take appropriate action,

invites ITU R

- 1 to conduct studies, as a matter of urgency, on technical (including necessary calculations and criteria), operational and regulatory issues on this topic, taking into account resolves 1, 2, 3 and 4, in time for WRC 15 to consider the results of these studies and take appropriate action;
- 2 to consider appropriate measures regarding the use of provisional recording in respect of coordination between assignments in the Appendix **30A** Plan and List in the band 14.5-14.8 GHz and the new fixed-satellite service utilization.

Frequency Range/Bands:	8.5-10.5 GHz Type 2 RLS 13.4-14 GHz RLS (primary) 14.62-15.23 GHz Type 1 Fixed/Mobile (primary) 15.7-17.3 GHz Type 1 RLS (primary)
Responsible SG/WP:	WP 4A
Contributing SG/WP:	WP 4C, WP 5A, WP 5B, WP 5C, WP 7B, WP 7C, WP 7D, (WP 3M)
CEPT Group:	CPG-PT B

Background

FSS uplink allocations in Region 2 are unbalanced by 250 MHz and Region 3 is unbalanced by 300 MHz. The objective is to balance FSS uplink and downlink spectrum for a total of 1 GHz. The Region 1 proposal intends to find an additional 250 MHz in both uplinks and downlinks to maintain the current balance while increasing its total allocations to match the other two regions.

NATO Military Interest

The 14.62-15.23 GHz frequency band is a NATO harmonized band used for implementing STANAG 7085 equipment. STANAG 7085 is a NATO standard for aeronautical wide bandwidth data links. The Alliance Ground Surveillance (AGS) programme is one system implementing STANAG 7085. Fifteen allies (Bulgaria, Czech Republic, Denmark, Estonia, Germany, Italy, Latvia, Lithuania, Luxembourg, Norway, Poland, Romania, Slovakia, Slovenia and the United States) are acquiring the AGS system (High Altitude Long Endurance UAV), which will be available to the Alliance in the 2017-2018 timeframe.

The majority of allies will provide financial contributions to development and sustainment of the AGS programme but all will benefit from AGS capabilities in support of NATO operations. Additionally this range contains critical NATO satellite communication, unmanned aircraft systems, and advanced military radar systems.

Regional Groups and other International Organisations

CEPT (February 2015)

Draft European Common Proposal (DECP):

Currently two options applicable to 1.6.2:

- 1 Add FSS uplinks to the 14.5-14.75 GHz frequency band
- 2 No change to the Radio Regulations

Statement contained in the CPG 15-6 meeting minutes:

Statement by Lithuania, Poland, Germany, Switzerland and France:

"The stating Administrations reiterate their opposition to the allocation of the band 14.5-15.35 GHz to the FSS because of its intensive usage by terrestrial services. Moreover, they emphasize that the band 14.62-15.23 GHz is a harmonized NATO band. In addition to sharing difficulties, these Administrations finally question the actual availability of this

spectrum for the FSS in Europe.”

CITEL (February 2015)

Draft Inter-American Proposal

MOD RR – add FSS uplinks in the 14.5-14.8 GHz frequency range; Canada and Brazil

United States’ proposal for AI 1.6.2 (New as of May 2015):

No change to the RR in the 13.25-13.75 GHz, 14.5-15.35 GHz, 15.4-17.1 GHz

NATO Military Position

NATO does not support additional primary allocations to the fixed-satellite service (FSS) (Earth-to-space) of 250 MHz in Region 2 and 300 MHz in Region 3 within the range 13-17 GHz.

Military Importance HIGH

Agenda Item 1.8

to review the provisions relating to earth stations located on board vessels (ESVs), based on studies conducted in accordance with Resolution **909 (WRC-12)**.

Military Importance LOW**Issue****Resolution 909 (WRC-12)**

Provisions relating to earth stations located on board vessels which operate in fixed-satellite service networks in the uplink bands 5 925-6 425 MHz and 14-14.5 GHz

resolves to invite ITU R

- 1 to review the provisions relating to ESVs which operate in the FSS in the uplink bands 5 925-6 425 MHz and 14-14.5 GHz and consider possible modifications to Resolution **902 (WRC 03)** in order to reflect current ESV technologies and technical characteristics that are being used or planned to be used, while protecting the other services referred to in recognizing a) and b) above;
- 2 to complete the referenced studies in time for WRC 15.

Frequency Range/Bands: 5 925-6 425 MHz and 14-14.5 GHz

Responsible SG/WP: WP 4A

Contributing SG/WP: WP 4C, WP 5A, WP 5B, WP 5C

CEPT Group: CPG-PT B

Background

Resolution 902 (WRC-03) introduced provisions relating to the use of earth stations on board vessels (ESVs) in certain bands allocated to the fixed-satellite service (FSS). In order to ensure the protection and future growth of other fixed services, ESVs need to operate under certain technical and operational limitations. Based on agreed technical assumptions, minimum distances from the low-water mark as officially recognized by the coastal State have been calculated, beyond which an ESV will not have the potential to cause unacceptable interference to other services in the bands 5 925-6 425 MHz and 14-14.5 GHz. The minimum distances from the low-water mark as officially recognized by the coastal State beyond which ESVs can operate without the prior agreement of any administration are 300 km in the 5 925-6 425 MHz band and 125 km in the 14-14.5 GHz band, taking into account the technical limitations in Resolution 902 (Annex 2). Any transmissions from ESVs within the minimum distances shall be subject to the prior agreement of the concerned administration(s).

Since then Resolution 902 (WRC-03) was accepted, the technology used by ESVs has advanced considerably, including the use of spread-spectrum modulation and other techniques which may improve compatibility with terrestrial co-frequency services.

The use of some technologies renders possible the decrease of the protection distances from ESVs up to the coast line (Extract of the CEPT brief, CPG February 2015).

NATO Military Interest

NATO Nations use ESVs in C and Ku bands and could potentially benefit from a reduction of protective distances should studies reflecting current ESV technologies conclude that such a reduction will not harm existing services.

Although these bands are not included in the NJFA 2014, they remain extensively used by NATO militaries including on board vessels.

Regional Groups and other International Organisations

Preliminary CEPT Position (CPG February 2015)

The CEPT considers that possible modifications to Resolution 902 (WRC-03) for the purpose of reflecting current ESV technologies and technical characteristics of the earth stations on board vessels (ESVs), should be made only while protecting the other services and also should not limit their further development. CEPT considers that it is necessary to keep the use of the existing criterion of protective distances for the purpose of regulating sharing between ESV and other services in the frequency bands specified in Resolutions 902 (WRC-03) and does not oppose reducing protective distances that take into account new technologies of ESV, while protecting the other services having allocations in the frequency bands 5 925-6 425 MHz and 14,0-14,5 GHz.

Furthermore, statistical analysis of European maritime traffic evolution shows that the number of vessels passes assumed in WRC-03 has not increased. However, CEPT is of the view that the increase in the type and number of ships that could use ESV stations, as a consequence of a reduction of antenna size, has been taken into account in a consistent way within the studies.

CITEL:

Preliminary proposal (USA):

MOD Res 902: to establish different protection distances for different maximum e.i.r.p. density levels, with shorter protection distances for e.i.r.p. density levels lower than those currently allowed by Resolution 902 (WRC-03).

NATO Military Position

NATO supports the continuation of studies of possible alternative approaches as a means to allow more flexibility to ESV operation while continuing to protect the other services to which the 5 925-6 425 MHz and 14-14.5 GHz bands are allocated.

Military Importance LOW

Agenda Item 1.9.1

to consider, in accordance with Resolution **758 (WRC 12)** possible new allocations to the fixed-satellite service in the frequency bands 7 150-7 250 MHz (space-to-Earth) and 8 400-8 500 MHz (Earth-to-space), subject to appropriate sharing conditions.

Military Importance HIGH**Issue**Resolution **758 (WRC 12)**
resolves to invite ITU R

- 1 to conduct technical and regulatory studies on the possible new allocations to the FSS in the frequency bands 7 150-7 250 MHz (space-to-Earth) and 8 400-8 500 MHz (Earth-to-space) in order to ensure compatibility with existing services, with a view to extending the current worldwide allocation to the FSS in the bands 7 250-7 750 MHz (space-to-Earth) and 7 900-8 400 MHz (Earth to space);
- 2 to conduct the appropriate regulatory studies to ensure that any new FSS allocation referred to in resolves 1 above is limited to FSS systems operated from a fixed known location in order to enable compatibility with systems of other services, taking into account that the operational requirements in the bands 7 150-7 250 MHz (space-to-Earth) and 8 400-8 500 MHz (Earth-to-space) do not encompass small VSAT-like FSS earth stations;

Frequency Range/Bands: Aimed frequency bands are 7 150-7 250 MHz (space-to-Earth) and 8 400-8 500 MHz (Earth-to-space).

Responsible SG/WP: WP 4A

Contributing SG/WP:

CEPT Group: CPG-PT B

Background

Origin: French Military

This Agenda Item is seeking an extension of current FSS allocations to compensate for a reported shortfall of available FSS spectrum for current and future applications use.

This agenda item, proposed on behalf of the French military, is one of a two-part proposal.

The 1.9.1 segment proposes new FSS downlinks in the 7 150-7 250 MHz band, with uplinks in the 8 400-8 500 MHz band.

In the CPM report, the 3 methods can be summarized as follow:

- Method A: The bands 7 150-7 250 MHz in the space-to-Earth direction and 8 400-8 500 MHz in the Earth-to-space direction are allocated worldwide on a primary basis to the FSS. The use of these bands is limited to GSO FSS space stations. There are also constraints associated to this allocation such as an eirp density mask limitation or a minimum antenna size.

- Method B: the bands 7 190-7 250 MHz in the space-to-Earth direction and 8 400-8 500 MHz in the Earth-to-space direction are allocated worldwide on a primary basis to the FSS. The use of these bands is limited to GSO FSS space stations. There are also constraints associated to this allocation such as an eirp density mask limitation or a minimum antenna size.
- Method C: No change to the Radio Regulations.

NATO Military Interest

NATO Nations are interested in new allocations to increase their satellite communications capacity in order to support of Alliance operations and missions.

The extension of the X Band would provide extended capacities (in terms of data rate or additional spots) for an essential NATO service covered today by NATO NSP2K for which France, UK and Italy are providing SATCOM capacities.

In a context where needs for military communications will continue to grow in the future especially for satellite communications, the X-Band will remain a core band for NATO SATCOM. Indeed, X-Band supports essential hardened satellite communications that justifies that FSS in X-Band is a harmonized class A NATO Band according to NJFA (2014).

Regional Groups and other International Organisations

Preliminary CEPT position (CPG February 2015)

CEPT supports new primary worldwide FSS allocations of 2*100 MHz in the bands 7 150-7 250 MHz (space-to-Earth) and 8 400-8 500 MHz (Earth-to-space) under the following conditions:

- The allocation is limited to geostationary FSS networks.
- FSS space stations in the band 7150-7235 MHz shall comply with the technical criteria outlined in section 3.1.3 below.
- FSS earth stations in the band 7 150-7 235 MHz shall not claim protection from, nor constrain the use and development of earth stations in the space research service (Earth-to-space) and the space operation service (Earth-to-space) allocated in the Russian Federation under No. 5.459. No. 5.43A does not apply.
- FSS Earth stations in the band 8 400-8 500 MHz shall be limited to specific earth stations operating at specified fixed points with a minimum antenna diameter of 3.5 m and shall be subject to coordination under Nos. 9.17 and 9.17A.
- FSS space stations in the band 8 400-8 500 MHz shall not claim protection from space stations in the space research service. No. 5.43A does not apply.
- FSS earth stations in the band 8 400-8 500 MHz shall not constrain the use and development of earth stations in the space research service.

CITEL (March 2014)

CAN/USA/MEX

If ITU-R studies demonstrate compatibility with incumbent services and if due consideration is given to a potential allocation to EESS under Agenda Item 1.11, these administrations will consider supporting allocations to the FSS in the bands 7 150-7 250 MHz and 8 400-8 500 MHz, or portions thereof, limited to FSS systems operated from a fixed, known location not encompassing small VSAT-like FSS earth stations.

NATO Military Position

Based on the results of sharing studies, NATO supports additional allocations to the FSS in the bands 7 150-7 250 MHz and 8 400-8 500 MHz noting that, in the latter band FSS systems will be limited to operations from a fixed, known location not encompassing small VSAT-like FSS earth stations.

Military Importance HIGH

Agenda Item 1.9.2

to consider, in accordance with Resolution **758 (WRC 12)** the possibility of allocating the bands 7 375-7 750 MHz and 8 025-8 400 MHz to the maritime-mobile satellite service and additional regulatory measures, depending on the results of appropriate studies.

Military Importance HIGH**Issue**

Resolution **758 (WRC 12)**
resolves to invite ITU R

to conduct technical and regulatory studies on the possibility of allocating the bands 7 375-7 750 MHz (space-to-Earth) and 8 025-8 400 MHz (Earth-to-space), or parts thereof, to the maritime-mobile satellite service, while ensuring compatibility with existing services.

Frequency Range/Bands: 7 375-7 750 MHz (space-to-Earth) and 8 025-8 400 MHz (Earth-to-space)

Responsible SG/WP: WP 4C

Contributing SG/WP:

CEPT Group: CPG-PT B

Background

Origin: French Military

This agenda item, proposed on behalf of the French military, is one of a two-part proposal. Only the bands 7 250-7 375 MHz (space-to-Earth) and 7 900-8 025 MHz (Earth-to-space) are allocated to the mobile-satellite service on a primary basis (cf. 5.461 Additional allocation). Extension of the mobile satellite service proposed under AI 1.25 of WRC-12 couldn't prove compatibility with incumbent services. However, it is assumed that an extension limited to the MMSS could meet better conditions of compatibility. Thus, the 1.9.2 segment seeks additional maritime mobile satellite service (MMSS) allocations in the 7 375-7 750 MHz (downlink), and in the 8 025-8 400 MHz (uplink) bands to compensate for a reported shortfall of available MMSS spectrum for current and future applications use.

In the draft CPM report, the 2 methods can be summarised as follow:

Method A: There would be no allocation to the MMSS within the 7 375-7 750 MHz and 8 025-8 400 MHz bands and therefore no change to the RR.

Method B: The 7 375-7 750 MHz and 8 025-8 400 MHz bands would be allocated to the MMSS under the following conditions:

- Use of the MMSS to be limited to geostationary satellites.
- Application of pfd limits in Table 21-4 of RR Article 21 in the 7 375-7 750 MHz band for MMSS downlink.
- Coordination under RR Nos. 9.7 and 9.21 for MMSS satellite networks.

NATO Military Interest

The military interest is to increase the usable bandwidth of satellite stations onboard vessels.

Regional Groups and other International Organisations

Preliminary CEPT position (CPG February 2015)

CEPT supports the results of the ITU-R studies on the possibility of making a new allocation to the MMSS in the bands 7 375-7 750 MHz (space-to-Earth) and 8 025-8 400 MHz (Earth-to-space), subject to not placing undue constraints to and to ensuring protection of the services already allocated in these frequency bands.

To this respect, CEPT does not support the usage of these bands for applications that could imply a deployment of a large number of Earth stations in the MMSS. In particular, CEPT does not support the usage of the bands 7 375-7 750 MHz (space-to-Earth) and 8 025-8 400 MHz (Earth-to-space) for e-navigation or GMDSS.

CEPT notes that the ITU-R and CEPT studies show that compatibility between FS, MS, EESS (space-to-Earth) and MMSS in the band 8 025-8 400 MHz requires the establishment of large exclusion zones around the EESS earth stations and FS, MS stations. CEPT also notes that the maintenance of an exclusion zones database and the enforcement of these exclusion zones for a steadily growing number of EESS Earth stations make such an allocation impracticable. In addition, CEPT notes that the protection of SRS deep space stations in adjacent band would have to be ensured through a combination of unwanted emission limits and/or exclusions zones, therefore adding to the constraints on MMSS.

Consequently CEPT doesn't support an allocation for MMSS in the band 8 025-8 400 MHz.

Taking into account that the sharing studies showed compatibility between the space stations of MMSS (space-to-Earth) and the existing services in the band 7 375-7 750 MHz, CEPT supports the allocation to the MMSS (space-to-Earth), limited to geostationary satellites, in this band, with the condition that earth stations in the MMSS systems do not claim protection from, nor constrain the use or development of the existing terrestrial services in this band. No 5.43A does not apply. Sharing with space services currently allocated in this frequency band can be achieved through coordination under RR Article 9.

CITEL Position (October 2014)

Draft Inter-American Proposal

No change and suppress the Resolution - USA, Canada, Mexico, and Costa Rica

World Meteorological Organisation (WMO)

Preliminary WMO Position as of 25 Jan 2013

WMO considers that no new allocations to the MMSS should be made in these frequency bands unless acceptable sharing criteria with EESS and MetSat are developed. Particular concern is noted with regard to potential interference to EESS (space-to-Earth) operations in 8 025-8 400 MHz at high latitudes from ships operating in proximity.

NATO Military Position

NATO does not support a new allocation to MMSS (Earth-to-space) in the 8 025-8 400 MHz band because of sharing difficulties with existing services. Noting however that ITU-R studies show a possible compatibility with other services in the 7 375-7 750 MHz band, NATO may consider a possible new allocation to the MMSS (space-to-Earth) in this band provided it does not create additional regulatory burden for military operations.

Military Importance HIGH

Agenda Item 1.10

to consider spectrum requirements and possible additional spectrum allocations for the mobile-satellite service in the Earth-to-space and space-to-Earth directions, including the satellite component for broadband applications, including International Mobile Telecommunications (IMT), within the frequency range from 22 GHz to 26 GHz, in accordance with Resolution **234 (WRC-12)**.

Military Importance LOW**Issue****Resolution 234 (WRC-12)**

Additional primary allocations to the mobile-satellite service within the bands from 22 to 26 GHz

resolves to invite ITU R

to complete, for WRC 15, sharing and compatibility studies towards additional allocations to the mobile-satellite service in the Earth-to-space and space-to-Earth directions, within portions of the bands between 22 GHz and 26 GHz, while ensuring protection of existing services within these bands as well as taking into account No. **5.340** and No. **5.149**.

Frequency Range/Bands: 22-26 GHz

Responsible SG/WP: WP 4C

Contributing SG/WP: WP 4A, WP 4B, WP 5A, WP 5C, WP 7A, WP 7B, WP 7C, WP 7D

CEPT Group: CPG-PT B

Background

This agenda item calls for looking into new, additional spectrum allocations to the mobile-satellite service (MSS) on a primary basis, both in the Earth-to-space and space-to-Earth directions within the frequency range from 22 GHz to 26 GHz. This agenda item was originated by Thuraya, an MSS system operator, and brought forward under the United Arab Emirates administration. The failure of WRC-12 Agenda Item 1.25 in securing additional MSS spectrum allocations led Thuraya to continue to seek additional allocations between 22 GHz to 26 GHz to satisfy its spectrum needs.

According to the CEPT assessment, the frequency range 22-26 GHz is allocated to a large number of radiocommunication services. Some of them are of considerable importance to European Administrations, i. e. the FS, EESS, RAS and SRS. Within 22-26 GHz, no areas could be identified where MSS services may operate, without causing interference to current services or constraining their development.

CPM text methods:

- Method A: No change.

- Method B1 and B2: To allocate the frequency bands 23.15-23.4 GHz (space-to-Earth) and 25.25-25.5 GHz (Earth-to-space) to the MSS. The difference between B1 and B2 is on the associated allocation conditions.
- Method C1 and C2: Allocations for the MSS in the space-to-Earth direction with 2 sub options for each: C1a and C2a for the frequency band 24.25-24.55 GHz and C1b and C2b for the band 22.65-22.95 GHz. The difference between B1 and B2 is on the associated allocation conditions

No sharing study demonstrating the feasibility between radiolocation service and MSS has been provided during the preparation of the WRC-15 and thus no specific method addresses this Radiolocation band in the CPM text.

NATO Military Interest

In the range 22-26 GHz, the band 24.05-24.25 GHz is a NATO harmonised class B. This band is important to NATO for the military use by land based intrusion detection radars.

Regional Groups and other International Organisations

Preliminary CEPT Position (CPG February 2015)

CEPT does not see a need for additional spectrum and does not support such additional allocations under this Agenda Item.

NATO Military Position

NATO supports no change to the 22-26 GHz range.

Military Importance LOW

Agenda Item 1.11

to consider a primary allocation for the Earth exploration-satellite service (Earth-to space) in the 7-8 GHz range, in accordance with Resolution **650 (WRC-12)**.

Military Importance LOW

Issue

Resolution 650 (WRC-12)

Allocation for the Earth exploration satellite service (Earth to space) in the 7-8 GHz range
resolves to invite ITU R

- 1 to study spectrum requirements in the 7-8 GHz range for EESS (Earth-to-space) telecommand operations in order to complement telemetry operations of EESS (space-to-Earth) in the 8 025-8 400 MHz band;
- 2 to conduct compatibility studies between EESS (Earth-to-space) systems and existing services, with priority to the band 7 145-7 235 MHz, and then within other portions of the 7-8 GHz range only if the band 7 145-7 235 MHz is found not to be suitable;
- 3 to complete the studies as a matter of urgency, taking into account the present use of the allocated band, with a view to presenting, at the appropriate time, the technical basis for the work of WRC 15,

resolves to invite WRC 15

to review the results of these studies with a view to providing a worldwide primary allocation to EESS (Earth-to-space) in the range 7-8 GHz with priority to the band 7 145-7 235 MHz.

Frequency Range/Bands: 7-8 GHz range with priority to 7 145-7 235 MHz
7 190-7 250 MHz for EESS uplink

Responsible SG/WP: WP 7B

Contributing SG/WP: WP 4A, WP 4C, WP 5A, WP 5C

CEPT Group: CPG-PT A

Background

Due to congestion in the 2 GHz band for EESS telecommand operations (using the band 2 025-2 110 MHz (E-to-s) and 2 200-2 290 MHz (s-to-E) for Telemetry, Tracking and Control (TT&C)), EESS proponents (mainly ESA) are seeking a new primary allocation to the Earth exploration-satellite service EESS (Earth-to-space) with priority to the band 7 145-7 235 MHz in order to complement telemetry operations of Earth exploration-satellite service (space-to-Earth) in the 8 025-8 400 MHz band.

A sizable number of future EESS missions will require to uplink to the spacecraft a large amount of data for operations plans and dynamic spacecraft software modifications. The spectrum that globally would be required on the Earth-to-space link for these telecommanding functions cannot be accommodated in the only EESS (Earth-to-space) allocation that is currently available in RR Article 5 for telecommanding, i.e. the 2 025-2 110 MHz frequency band. This frequency band is of fundamental importance, since there are already more than 1 100 satellite networks filed with the ITU and many new

satellite networks are expected to enter into this frequency band, also including many microsatellites, nanosatellites and picosatellites. It would be extremely difficult, if not impossible, to coordinate satellites with such large spectrum requirements within this frequency band.

An EESS (Earth-to-space) allocation in the 7-8 GHz frequency range would allow alleviating the problems posed by this new type of EESS mission. The TT&C function could be implemented by pairing this new allocation with the already existing EESS (space to Earth) allocation in the frequency band 8 025-8 400 MHz. This may also eventually lead to a simplified on-board architecture and operational concept for some future EESS missions.

Studies:

Studies of spectrum requirements for the EESS have been made which indicates that the EESS system spectrum requirements are between 38 and 56 MHz. 38 MHz spectrum required in the case when the allocation is made in frequency bands not shared with other space services, while 56 MHz spectrum required in the case when the allocation is made in bands shared with other space services (like the frequency band 7 190-7 235 MHz).

Sharing studies between stations of the EESS (Earth-to-space) and the SRS, FS, MS and SOS in various portions of the 7-8 GHz frequency range are addressed in Reports ITU-R RS.2272, ITU-R RS.2275 and PDN Report ITU-R SA.[EESS-Space 7GHz]. These studies show that sharing would be feasible in the frequency band 7 190-7 250 MHz, covering therefore the spectrum requirements identified.

CPM Methods:

Three methods have been proposed to satisfy this agenda item.

Methods A and B proposes “to add a global primary allocation to the EESS in the frequency band 7 190-7 250 MHz in the Table of Frequency Allocations in RR Article 5 and to include a provision with regard to this allocation” with different conditions establishing protection of currently allocated services (see below). Additionally, Table 7b in RR Appendix 7 is modified to include the EESS allocation, and Table 21 3 in RR Article 21 is modified to extend the frequency range 7 190-7 235 MHz to 7 190-7 250 MHz.

Method A

... for the modification of RR footnote No. 5.460 in order to indicate that geostationary EESS systems shall not claim protection from existing and future stations of the FS and the MS, that RR No. 5.43A does not apply and that EESS usage is restricted to TT&C for spacecraft operations. For the SOS, the obtaining of agreement under RR No. 9.21 (see RR No. 5.459) with regard to the EESS is not applied.

Method B

... under which:

- for operation of EESS systems in the frequency band 7 190-7 235 MHz subject to obtaining agreement under RR No. 9.21 with regard to the SOS which is applied in accordance with RR No. 5.459;
- space stations in the EESS (Earth-to-space) shall not claim protection from existing and future stations in the FS and the MS in the frequency band 7 190-7 250 MHz, and that RR No. 5.43A does not apply.
- space stations in the EESS (Earth-to-space) shall not claim protection from SRS earth stations in the frequency band 7 190-7 235 MHz.

Method C is the proposal of no change to the Radio Regulations.

All three methods support the suppression of Resolution 650 (WRC-12).

NATO Military Interest

As for the time being there is very limited utilization of military applications in the range 7 190-7 250 MHz, the military interest is on a potential future satellite utilization after the proposed expansion (under AI 1.9.1) of the existing fixed satellite service bands (s-E), which will be of direct benefit to NATO.

The range 7 150-7 250 MHz is a new military requirement for use by future military satellite communications based on the expansion of the fixed-satellite service allocation and supporting the strategy for future provision of satellite communications for NATO. This additional bandwidth, data rate and coverage demand for robust military satellite communications is exceeding the present provisions in the band 7 250-7 750 MHz.

This agenda item is to be considered in connection with 1.9.1

Regional Groups and other International Organisations

Preliminary CEPT position (February 2015)

CEPT supports the allocation of the frequency band 7 190-7 250 MHz on a primary basis to the Earth exploration-satellite service (Earth-to-space) for non-geostationary satellite systems (Method A - Option 1), as geostationary applications currently are not foreseen in Europe. However, CEPT does not object to the extension of this position to geostationary systems (Method A - Options 2 or 3).

Studies indicate that sharing is feasible with all the services in the frequency range 7 190-7 250 MHz.

CEPT is of the view that there is no need for changes in Table 21-2 of Radio-Regulations Article 21 as proposed under Method A.

CEPT recognizes that EESS (Earth-to-space) cannot share with SRS (deep space) in the 7 145-7 190 MHz band and therefore does not support allocation of the frequency band 7 145-7 190 MHz on a primary basis to the Earth exploration-satellite service (Earth-to-space).

CITEL position (November 2014)

The administrations of Argentina, Brazil, Canada, Mexico, Uruguay and United States of America support the draft CPM Method A, option 2. The discussions have not ended.

- Add global primary allocation to EESS (Earth-to-space) in the 7 190-7 250 MHz band and divide the Table of Frequency Allocation at 7 190 MHz to clarify the allocation of services within the Table.
- MOD No. 5.460 - to indicate that geostationary EESS systems shall not claim protection from existing and future stations of the FS and consequential to dividing the table at 7 190 MHz
- MOD Article 21 Tables 21-2 and 21-3 - consequential
- MOD Appendix 7 Table 7b - consequential
- SUP Resolution 650 (WRC-12)

NATO Military Position

NATO supports allocation of the band 7 190-7 250 MHz to the EESS (E-s), based on studies that demonstrate compatibility with incumbent services and a future FSS (s-E) under Agenda Item 1.9.1.

Military Importance LOW

Agenda Item 1.12

to consider an extension of the current worldwide allocation to the Earth exploration satellite (active) service in the frequency band 9 300-9 900 MHz by up to 600 MHz within the frequency bands 8 700-9 300 MHz and/or 9 900-10 500 MHz, in accordance with Resolution **651 (WRC-12)**.

Military Importance HIGH

Issue

Resolution **651 (WRC-12)**

Possible extension of the current worldwide allocation to the Earth exploration-satellite (active) service in the frequency band 9 300-9 900 MHz by up to 600 MHz within the frequency bands 8 700-9 300 MHz and/or 9 900-10 500 MHz

resolves

that, taking into account the results of ITU-R studies, WRC-15 consider the possible extension of the current worldwide allocation to the EESS (active) in the frequency band 9 300-9 900 MHz by up to 600 MHz on a primary and/or secondary basis, as appropriate, within the frequency range 8 700-9 300 MHz and/or 9 900-10 500 MHz while ensuring protection of existing services and taking due account of the safety services allocated in the frequency band 9 000 to 9 300 MHz,

invites ITU R

to conduct and complete, in time for WRC 15, compatibility studies addressing:

- 1 EESS (active) and existing services in the frequency bands 8 700-9 300 MHz and 9 900-10 500 MHz in order to ensure the protection of the existing services, taking into account the constraints as per No. **5.476A**;
- 2 unwanted emissions from stations operating in the EESS (active) within the frequency band 8 700-9 300 MHz into stations of the space research service operating in the frequency band 8 400-8 500 MHz;
- 3 unwanted emissions from stations operating in the EESS (active) within the frequency band 9 900-10 500 MHz into stations of the radio astronomy service, space research service (passive) and EESS (passive) operating in the frequency band 10.6-10.7 GHz.

Frequency Range/Bands: 8 700-9 300 MHz and/or 9 900-10 500 MHz

Responsible SG/WP: WP 7C

Contributing SG/WP: WP 5A, WP 5B, WP 5C, WP 7B, WP 7D

CEPT Group: CPG-PT A

Background

Space-borne radars operating in the EESS (active) in the band 9.3-9.9 GHz have demonstrated their important contributions to a large number of scientific and geoinformation applications. For higher picture resolution and next generation synthetic aperture radar (SAR) systems a contiguous 1 200 MHz is necessary.

Sharing studies were completed in ITU-R Study Group 7 with all incumbent radio services allocated in both potential frequency ranges 8.7-9.3 GHz and 9.9-10.5 GHz. It is assumed that the conditions for sharing with Radiolocation, Fixed and other Services within the existing allocation of 9.3-9.9 GHz can be widely extrapolated into the candidate extension bands.

Results of studies:

Sharing EESS (active) with the Radiodetermination Service:

It is shown in Report ITU-R RS.2313 that the impact of SAR system operating with a chirp bandwidth of 600 MHz and 1200 MHz is similar and that conclusions of the Report ITU-R RS.2094 (WRC12) are still valid. Further studies took all radars into account that were identified to be new in the 2013 revision of Recommendation ITU-R M.1796(-2). In cases of main beam to main beam coupling and without any processing gain of the radar the I/N can reach values in the order of 60 dB for 0.00001% of the time. The average I/N protection criterion of -6 dB would be exceeded in less than 0.005% of the time. Under the comprehensible assumption of a processing gain (compare Report ITU-R RS.2094) the interference situation can be improved significantly. It was concluded, that a radar might cope with this interference. Sharing in the frequency band 9-9.2 GHz would be difficult, mainly due to the safety aspects of the affected services. The compatibility with SAR-Transponders operating under the GMDSS in the band 9.2-9.3 GHz is feasible.

Sharing EESS (active) with the Fixed Service (FS) in the frequency bands 8.7-8.75 and 10-10.5 GHz and the Mobile Service (MS) is feasible. Note: only ENG/OB was studied as only identified MS use.

The following methods to satisfy the agenda item have been developed by CPM:

- Method A: Primary EESS (active) allocation in the frequency band 9 900-10 500 MHz with 2 options: Method A1 (with two sub-options) and Method A2.
- Method B: Primary EESS (active) allocation in the frequency bands 9 200-9 300 MHz and 9 900-10 400 MHz with 2 options: Method B1 and Method B2.
- Method C: Primary EESS (active) allocation in the frequency bands 9 200-9 300 MHz and 10 000-10 100 MHz, and secondary allocation in the frequency band 9 900-10 000 MHz.
- Method D: No change to the Radio Regulations (NOC).

Methods A, B and C would impose that systems operating in the new EESS (active) allocation shall not cause harmful interference to, nor claim protection from radars operating in the radiodetermination service.

NATO Military Interest

The entire range 8 500 – 10 500 MHz is essential to NATO for the military use by land, airborne and naval radars in the radiolocation service. Possible improvement of the resolution of radar pictures by next generation of spaceborne Earth observation radars benefits to the military as well, e.g. because of the expected availability of better geo-information.

Regional Groups and other International Organisations

Preliminary CEPT Position (CPG February 2015)

CEPT supports the allocation of additional radio frequency spectrum of 600 MHz in the frequency bands 9 200-9 300 MHz and 9.9-10.4 GHz with a primary status to the Earth Exploration-Satellite Service (active).

CEPT supports, that stations in the Earth exploration-satellite service (active) shall not cause harmful interference to, nor claim protection from, stations operating in the Radio Determination Services allocated in the same frequency bands. The extension band should be only used by SAR systems requiring more than 600 MHz bandwidth.

CEPT supports, that provisions for the protection of Fixed and Mobile Services from EESS (active) need to be implemented, as appropriate.

CEPT supports, that the Space Research Service operating in the band 8 400-8 500 MHz and the Radio Astronomy Service operating in the band 10.6-10.7 GHz will be protected through the implementation of mitigation techniques, and, if not sufficient, through operational coordination, as described in Recommendations ITU-R RS.2065 and RS.2066.

CITEL (21 March 2014)

Preliminary Views

Brazil, Canada, United States:

- Support studies that would lead to the potential extension of the current EESS (active) allocation in the frequency band 9 300-9 900 MHz by 600 MHz;;
- Supports the ITU-R study results on the EESS spectrum requirements which demonstrate that 1 200 MHz of contiguous spectrum is necessary;
- Compatibility with existing services will have to be ensured; in accordance with the appropriate protection criteria and taking into account any available mitigation techniques that would reduce the level of unwanted emissions into adjacent band.

United States:

If studies demonstrate that the existing in-band services and the services in the 10.5-10.7 GHz frequency range are protected, the United States supports extending the EESS allocation by 600 MHz. Studies should initially consider only the 9.9-10.5 GHz range.

Only if studies prove that the existing services cannot be protected and/or sufficient spectrum cannot be made available in the 9.9-10.5 GHz range, does the United States support consideration of the 8 700-9 300 MHz range.

Preliminary Proposals

Canada

- MOD Article 5: The bands 9 900-10 500 MHz be allocated to the Earth Exploration-satellite (active) service with primary status
- MOD footnote No. 5.476A to protect the Radionavigation and Radiolocation services
- ADD footnote No. 5.A112 to ensure the newly allocated spectrum is used solely by high resolution EESS systems whose spectrum needs exceeds the existing EESS allocation in the 9 300-9 900 MHz band
- SUP Resolution 651(WRC-12)

NATO Military Position

If studies show compatibility with the incumbent radio services and other services in nearby allocations are adequately protected from unwanted emissions, NATO will support an additional allocation of up to 600 MHz to complement the existing 9 300-9 900 MHz EESS allocation. The extension band should be only used by SARsystems requiring more than 600 MHz bandwidth. Based on the results of studies, NATO does not support an EESS allocation below 9 200 MHz.

Military Importance HIGH

Agenda Item 1.14

to consider the feasibility of achieving a continuous reference time-scale, whether by the modification of coordinated universal time (UTC) or some other method, and take appropriate action, in accordance with Resolution **653 (WRC-12)**.

Military Importance MEDIUM**Issue**Resolution **653 (WRC-12)**

Future of the Coordinated Universal Time time-scale
resolves to invite WRC 15

to consider the feasibility of achieving a continuous reference time-scale, whether by the modification of UTC or some other method, and take appropriate action, taking into account ITU R studies,
invites ITU R

- 1 to conduct the necessary studies on the feasibility of achieving a continuous reference time-scale for dissemination by radiocommunication systems;
- 2 to study issues related to the possible implementation of a continuous reference time scale (including technical and operational factors).

Frequency Range/Bands:	None
Responsible SG/WP:	WP 7A
Contributing SG/WP:	WP 6A
CEPT Group:	CPG-PT A

Background

Leap seconds as implemented in UTC today represent irregularly occurring interruptions in what would otherwise be a continuous reference time scale. Leap seconds are implemented through manual intervention and are not necessarily implemented simultaneously across individual NATO member state systems.

Origin: Began as two distinct multi-country proposals:

- (1) Germany, Brazil, U.S., France, Japan, Mexico and New Zealand
- (2) United Kingdom, Canada and China

A compromise between the two original contributions, which seeks to achieve a continuous reference time-scale, either by UTC modification or by some other method. Several organizations have requested an examination of a continuous time-scale for systems and applications dependent on accurate timing.

Summary of CPM Methods

Method A1: Stop the insertion of leap seconds in UTC. To allow for an adequate period of time for those legacy systems reliant on the use of leap seconds to adapt to the change in UTC, the application of the suppression of leap second adjustments to UTC will be effective

not earlier than five years after the date of entry into force of the Final Acts of the WRC-15. The name "UTC" will be retained for the time scale.

Method A2: This method is similar to Method A1 but it is proposed to change the name "UTC".

Method B: Retain UTC as currently defined and introduce a continuous reference atomic time-scale based on TAI with an offset with respect to UTC to be broadcasted on an equal basis.

Method C1: No change in definition of UTC which will remain the only time-scale which is broadcast in order to avoid any confusion.

Method C2: This method is similar to Method C1 except that Recommendation ITU-R TF.460-6 would be amended to include additional definitions, corrections and/or materials with respect to the feasibility of using continuous system time-scales for radiocommunication systems

Method D: No change to the Radio Regulations as the results of the studies are not conclusive.

NATO Military Interest

Leap seconds represent a potential disruption in the interoperability and coordination of NATO member military systems. They can potentially create timing inconsistencies and timing offsets which could negatively impact functions such as handshaking protocols between systems, time stamping, data exchange, secured communication and general telecommunication links, as well as NATO command and control, tracking & targeting systems. Such disruptions could be of particular concern if a leap second is implemented during NATO active operations, exercises, or deployments.

Regional Groups and other International Organisations

Preliminary CEPT Position (CPG February 2015)

- CEPT supports the necessary studies on the feasibility of achieving a continuous reference time-scale, by modification of UTC or by other method, for dissemination by radiocommunication systems
- CEPT also supports study on issues related to the possible implementation of a continuous reference time-scale (including technical and operational factors)

CITEL

Draft IAP as of Feb 2015 CITEL PCC.II Meeting:

Given the results of studies, this proposal supports the adoption of UTC without leap seconds as the most feasible means for achieving a continuous reference time-scale for dissemination by radiocommunication systems. To ensure sufficient time for legacy systems to update hardware and/or software to accommodate the elimination of leap seconds from UTC, a period of five years from the date of entry into force of the Final Acts of WRC-15 will be the effective date of application of revisions to the Radio Regulations resulting from Resolution 653 (WRC-12).

NATO Military Position

NATO will continue to monitor the progress on this item and will evaluate the potential impact on military systems, but NATO has determined that if modified UTC were adopted, a transition period of five years or more would be required to implement this change.

Military Importance MEDIUM

Agenda Item 1.16

to consider regulatory provisions and spectrum allocations to enable possible new Automatic Identification System (AIS) technology applications and possible new applications to improve maritime radiocommunication in accordance with Resolution **360 (WRC-12)**.

Military Importance LOW

Issue

Resolution 360 (WRC-12)

Consideration of regulatory provisions and spectrum allocations for enhanced Automatic Identification System technology applications and for enhanced maritime radiocommunication

resolves to invite WRC 15

- 1 to consider, based on the results of ITU R studies, modifications to the Radio Regulations, including possible spectrum allocations, to enable new AIS terrestrial and satellite applications, while ensuring that these applications will not degrade the current AIS operations and other existing services;
- 2 to consider, based on the results of ITU R studies, additional or new applications for maritime radiocommunication within existing maritime mobile and mobile-satellite service allocations, and if necessary to take appropriate regulatory measures,

invites ITU R

- 1 to conduct, as a matter of urgency, studies that identify potential regulatory actions to accommodate emerging maritime mobile service and mobile-satellite service AIS requirements;
- 2 to conduct, as a matter of urgency, studies on additional or new applications for maritime radiocommunication within maritime mobile and mobile-satellite service allocations, and to identify potential regulatory actions to accommodate emerging maritime radiocommunication requirements;
- 3 to complete studies in time for WRC 15 taking into account existing systems and services that share the bands.

Frequency Range/Bands: None
Responsible SG/WP: WP 5B
Contributing SG/WP: WP 5A, WP 6A
CEPT Group: CPG-PT C

Background

Origin: Maritime industry, U.S. (USCG), CITEL, CEPT and IMO

The polar ice caps are melting and have created new maritime routes. These new routes need safety of life communications support since current technology cannot reach the polar regions (above and below 70 degrees latitude). Further, global port congestion is necessitating additional communication spectrum to ensure safe communications of ships entering ports.

NATO Military Interest

NATO Nations may benefit from new AIS applications through enhanced situational awareness and port security. AIS is routinely installed on Navy ships.

Regional Groups and other International Organisations

Preliminary CEPT Position (CPG February 2015)

- CEPT is of the view that the implementation of the Concept of the VHF Data Exchange System (VDES) which contains a VDE terrestrial component, a satellite component and an ASM component would enhance maritime radio communications.
- CEPT is of the view that no modifications should be required to existing AIS equipment on board existing vessels and that the integrity of the original operational purpose of AIS as the primary function on the existing AIS frequencies should be protected.
- CEPT considers that a combination of channels 24, 25, 84, and 85 could be a possible solution for the terrestrial component for the future VDES.
- CEPT is considering a new secondary allocation to the maritime mobile satellite service in both the down- and uplink directions, while ensuring the protection of existing terrestrial and radio astronomy services. The provisions 5.208A and 5.208B are proposed to be modified in order to quote the frequency band where VDES is intended to operate. The VDES downlink has to fulfil these modified provisions in order to ensure compatibility with the radio astronomy services.
- CEPT is of the view that a satellite component should use frequencies within the appendix 18 close to AIS 1 and AIS 2 so that the same equipment as for VDES can be used. Therefore the downlink could comprise the following combination of channels 2024, 2025, 2026, 2084, 2085 and 2086. For the uplink comprising the following channels 1024, 1025, 1026 1084, 1085, 1086 and the frequencies ASM1 (Channel 2027) and ASM2 (Channel 2028). (See Annex 1).

CITEL

CAN PP: supports in part Methods A1 and C1

USA PP: supports in part Methods A1 and A2

NATO Military Position

NATO supports the consideration of regulatory provisions or enhanced AIS technology applications and for enhanced maritime radiocommunication, while protecting the integrity of the original operational purpose of AIS.

Military Importance LOW

Agenda Item 1.17

to consider possible spectrum requirements and regulatory actions, including appropriate aeronautical allocations, to support wireless avionics intra-communications (WAIC), in accordance with Resolution **423 (WRC-12)**.

Military Importance MEDIUM

Issue

Resolution 423 (WRC-12)

Consideration of regulatory actions, including allocations, to support Wireless Avionics Intra-Communications

resolves

that WRC 15 consider, based on the results of ITU R studies, possible regulatory actions, including appropriate aeronautical allocations, to support the implementation of WAIC systems, while taking into account spectrum requirements for WAIC and protection requirements for systems operating in accordance with existing allocations,

invites ITU R

- 1 to conduct, in time for WRC 15, the necessary studies to determine the spectrum requirements needed to support WAIC systems;
- 2 to conduct sharing and compatibility studies, based on the results of invites ITU R 1, to determine appropriate frequency bands and regulatory actions;
- 3 when conducting studies in accordance with invites ITU R 2, to consider:
 - i frequency bands within existing worldwide aeronautical mobile service, aeronautical mobile (R) service and aeronautical radionavigation service allocations;
 - ii additional frequency bands above 15.7 GHz for aeronautical services if spectrum requirements cannot be met in frequency bands studied under invites ITU R 3 i).

Frequency Range/Bands: The frequency bands
2 700-2 900 MHz,
4 200-4 400 MHz and
5 350-5 460 MHz
have been studied.

Responsible SG/WP: WP 5B

Contributing SG/WP: WP 4A, WP 4C, WP 5A, WP 5C, WP 7B, WP 7C, WP 7D

CEPT Group: CPG-PT C

Background

Wireless avionics intra-communications (WAIC) systems make use of radio communications between two or more stations on a single aircraft; consisting of on-board networks supporting the operation of the aircraft. WAIC system transmissions may not be limited to the interior of the aircraft structure, depending on the type of aircraft. For example, sensors mounted on the wings or engines could communicate with systems located within the airplane. WAIC systems will be used for safety-related aircraft applications, providing communications within a single aircraft (i.e. WAIC systems do not provide communications

between an aircraft and the ground, another aircraft or a satellite). A major application field for WAIC systems is wireless sensing and data transmission by replacing wires or as added parallel switchover safety system for data transmission. Additional functions can be incorporated on an aircraft with wireless technology which cannot be performed with wires, e.g. engine rotor bearing monitoring. Reliably routing wiring harnesses to engine rotator bearings is impractical due to the rotation of parts. Wireless technologies are intended to offer the means to implement systems that can enhance reliability with lower maintenance efforts and not suffering from typical problems of wires (e.g. aging, destruction by fire hazards).

After several studies the range being concentrated on is 4 200-4 400 MHz and only one method to satisfy the agenda item was developed in CPM. There is no NOC method. Since state aircrafts including military aircrafts are in principle not covered by the ICAO rules regulatory provisions were incorporated in the Recommendation ITU-R M.[WAIC-CONDITIONS] that should provide the principal protection to military aircrafts too.

NATO Military Interest

To protect the existing military applications, e.g. Radio Altimeters in 4 200-4 400 MHz, in the frequency bands under consideration.

Regional Groups and other International Organisations

Preliminary CEPT Position (CPG February 2015)

CEPT supports a primary AM(R)S allocation in the 4 200-4 400 MHz band exclusively reserved for WAIC systems to accommodate the required frequency spectrum of 145 MHz.

CEPT is of the view that such systems operating in the AM(R)S allocation shall not cause harmful interference, nor create any constraint to systems (i.e. radioaltimeter) operating under the ARNS allocation in the frequency band 4 200-4 400MHz.

CITEL (MARCH 2014)

Inter-American Proposals

B, CAN, DOM, EQA, NCG, SLV, USA

- ADD footnote to the Table of Frequency Allocations (4 200-4 400 MHz) allowing the provision of wireless avionics intra-communications
- ADD footnote specifying that passive sensing in the Earth exploration-satellite and space research services may be allocated on a secondary basis (maintaining the current allowance of these services), and that no protection is afforded to these services

APT (28 NOVEMBER 2013)

APT Members supports relevant ITU-R studies on WAIC in accordance with Resolution 423 (WRC-12). APT Members are also of the view that the possible introduction of WAIC systems should not cause harmful interference nor constraints to services to which the frequency band is allocated.

ATU (JANUARY 2014)

African Preliminary View:

- Views WAIC communication as an application of a safety service of the Aeronautical Mobile (Route) Service (AM(R)S).

- to support the identification of 145 MHz of frequency spectrum under the AM(R)S, for the harmonized usage of WAIC.
 - to support a primary allocation to the AM(R)S in the frequency band 4 200-4 400 MHz, limited to the use by WAIC-systems.
 - to support further sharing and compatibility studies on other frequency bands as necessary.
- African Preliminary Position:
To support Methods A (Option 2) and B.

ASMG Position(February 2015)

ASMG supports a primary AM(R)S allocation in the 4 200-4 400 MHz band exclusively reserved for WAIC systems inside the aircraft through a footnote or footnotes with a resolution to include the requirements of protection systems operating in accordance with the existing allocation. "Method B"

RCC (25 APRIL 2013)

The RCC administrations consider that WAIC systems shall be operated in frequency bands allocated to aeronautical services.

The RCC administrations consider that the frequency bands used by WAIC shall be harmonized in all three Regions.

The RCC administrations consider that the introduction of WAIC systems shall not impose constraints on other systems operating in shared frequency bands.

ICAO (JULY 2013)

Support any necessary additional global aeronautical mobile (route) service allocation required to facilitate the implementation of WAIC, provided technical studies show that WAIC systems will not cause harmful interference to existing or planned aeronautical systems operating in frequency bands allocated to aeronautical safety services.

SFCG (June 2014)

SFCG supports the protection of existing space science service allocations. No identification of bands for WAIC systems operations should be made in bands allocated to science services unless acceptable sharing criteria with the affected space science service are developed. Given that the WAIC proponents are seeking safety service allocations for WAIC operations, studies also need to verify that the proposed WAIC systems would not receive harmful interference from the existing space science services operating with their current technical and operational parameters.

WMO (23 December 2014)

WMO opposes the use of the 2 700-2 900 MHz and 5 350-5 460 MHz frequency bands for WAIC based on the approved ITU-R studies which conclude that sharing between meteorological radars and WAIC is not feasible in these bands.

If other frequency bands were to be considered for WAIC (e.g. the frequency band 13.25-13.4 GHz or the frequency bands 22.5-22.55 GHz and 23.55-23.6 GHz), compatibility with meteorological and Earth observation applications would need to be assessed and the adequate protection has to be ensured.

CRAF (September 2014)

As noted in the Executive Summary 3/1.17/1 of the CPM text,
“The Report concludes that 145 MHz of radio frequency spectrum is necessary to support the requirements for WAIC systems.”

CRAF approves either Method A (any option) or Method B, with a slight preference for Method B, both of which allocate the band 4 200-4 400 MHz to WAIC, with variations in the way the allocation is described and footnoted. This band is wider than the stated needs for WAIC of 145 MHz.

ESA (September 2014)

Support SFCG positions

EUMETNET (September 2014)

Support WMO positions

NATO Military Position

NATO supports a primary AM(R)S allocation in the 4 200-4 400 MHz band limited to WAIC to accommodate the required frequency spectrum of 145 MHz providing that the protection of the military ARNS (radio altimeters) in this band is ensured through appropriate provisions of the RR.

Military Importance MEDIUM

Agenda Item 9.1.1

to consider and approve the Report of the Director of the Radiocommunication Bureau, in accordance with Article 7 of the Convention on the activities of the Radiocommunication Sector since WRC-12 in accordance with Resolution **205 (WRC-12)**.

Military Importance LOW

Issue

Resolution **205 (Rev.WRC-12)**

Protection of the systems operating in the mobile-satellite service in the band 406-406.1 MHz

resolves to invite ITU R

- 1 to conduct, and complete in time for WRC 15, the appropriate regulatory, technical and operational studies with a view to ensuring the adequate protection of MSS systems in the frequency band 406-406.1 MHz from any emissions that could cause harmful interference (see No. **5.267**), taking into account the current and future deployment of services in adjacent bands as noted in considering f);
- 2 to consider whether there is a need for regulatory action, based on the studies carried out under resolves 1, to facilitate the protection of MSS systems in the frequency band 406-406.1 MHz, or whether it is sufficient to include the results of the above studies in appropriate ITU R Recommendations and/or Reports, instructs the Director of the Radiocommunication Bureau,

instructs the Director of the Radiocommunication Bureau

- 1 to include the results of these studies in his Report to WRC 15 for the purposes of considering adequate actions in response to resolves to invite ITU R above;
- 2 to organize monitoring programmes in the frequency band 406-406.1 MHz in order to identify the source of any unauthorized emission in that band.

Frequency Range/Bands: 406-406.1 MHz

Responsible SG/WP: WP 4C

Contributing SG/WP: WP 5A, WP 5B, WP 5C, WP 7B, WP 7C

CEPT Group: CPG-PT B

Background

The frequency band 406-406,1 MHz band is restricted to low-power satellite emergency position-indicating radiobeacons (EPIRBs) which is an essential element of the global distress and safety system.

CPM report proposes that "Resolution 205 (Rev.WRC-12) could be revised with a view of having an adequate protection of the MSS in the frequency band 406-406.1 MHz in order to detect and successfully process 406 MHz distress signals, taking into account the current and future deployment of services in adjacent frequency bands."

NATO Military Interest

There is a direct NATO military interest in protecting the emergency frequency 406-406.1 MHz:

- Military forces could benefit of distress services in case of emergency,
- National Defence is usually directly involved in search and rescue organisation and missions.

There is also a need to avoid undue constraints on NATO military applications using 406-406.1 MHz adjacent bands. In the 390-399.9 MHz band (part of the 225-400 MHz NATO harmonized type A), NATO countries operate systems whose characteristics are classified leading to the issue of providing relevant information for ITU-R studies.

Regional Groups and other International Organisations

CEPT preliminary position (CPG February 2015):

In order to ensure adequate protection of MSS systems in the frequency band 406-406.1 MHz, CEPT supports a revision of Resolution 205 (Rev WRC-12) containing protection measures such as the implementation of a guard band from 406.1 MHz to 406.2 MHz; Administrations should consider applying the guard band to new frequency assignments and this guard band is not applicable to existing stations/networks.

World Meteorological Organisation (WMO)

Preliminary WMO Position as of 25 Jan 2013

WMO supports studies and regulatory measures towards ensuring the adequate protection to Cospas-Sarsat receivers against emissions from adjacent bands, noting that, to a large extent, those receivers are implemented on meteorological satellites.

NATO Military Position

NATO supports the adequate protection to the MSS band 406-406.1 MHz while not putting undue constraints to the radio services allocated in the adjacent frequency bands.

Military Importance LOW

Agenda Item 9.1.6

to consider and approve the Report of the Director of the Radiocommunication Bureau, in accordance with Article 7 of the Convention on the activities of the Radiocommunication Sector since WRC-12 in accordance with Resolution **957 (WRC-12)**.

Military Importance LOW

Issue

Resolution **957 (WRC-12)**

Studies towards review of the definitions of fixed service, fixed station and mobile station *resolves*

- 1 to review the definitions of *fixed service*, *fixed station* and *mobile station* contained in Article 1 for possible modification;
- 2 to study the potential impact on regulatory procedures in the Radio Regulations (coordination, notification and recording) and the impact on current frequency assignments and other services resulting from possible changes to the definitions referred to in *resolves* 1.

Responsible SG/WP: WP 1B

Contributing SG/WP:

CEPT Group: CPG-PT A

Background

This agenda item seeks to continue studying the definitions of the fixed service, fixed station, and mobile station and study the potential impacts on regulatory procedures in the radio regulations and the current impact on current frequency assignments and other services. This agenda item evolved out of WRC-12 agenda item 1.2 during the conference. The compromise established allowed proponents of studying definitions to continue their work in exchange for the suppression of Resolution 951.

NATO Military Interest

Any Change to the definitions in Article 1 of the RR might have unpredictable consequences to Military spectrum use and access.

Regional Groups and other International Organisations

Preliminary CEPT Position (CPG February 2015)

CEPT is of the view that there is no need to modify the existing definitions of fixed service, fixed station and mobile station. Furthermore CEPT opposes any modification which may have any negative regulatory impact on existing allocations to radiocommunication services. CEPT therefore propose NOC to the Radio Regulations under this issue.

CITEL IAP (Feb 2015)

NOC to the definitions of fixed service, fixed station, and mobile station.

NATO Military Position

NATO is of the view that it is unnecessary to change any Article 1 definitions.

Military Importance LOW

Agenda Item GFT

Military Importance

Issue

The loss of Flight MH370 spurred worldwide discussions on global flight tracking and the need for coordinated action by ITU and other relevant organization(s), within the scope of their respective mandates. Determination of the position of aircraft and reporting this information to air traffic control centres represents an important element of aviation safety and security. PP-14 resolves to instruct WRC-15, pursuant to No. 119 of the ITU Convention, to include in its agenda, as a matter of urgency, the consideration of global flight tracking, including, if appropriate, and consistent with ITU practices, various aspects of the matter, taking into account ITU-R studies.

Frequency Range/Bands:	1 088.7-1 091.3 MHz
Responsible SG/WP:	WP 5B
Contributing SG/WP:	WP 4C
CEPT Group:	CPG-PT C

Background

Beyond the traditional form of primary radar surveillance, there are ground based interrogator and aircraft transponder systems which can provide the air traffic management system with aircraft identification, altitude, ground speed etc. These systems, known as secondary surveillance radar (SSR), are internationally standardised by ICAO. Interrogation by terrestrial ground stations on the frequency 1 030 MHz requests a reply from the aircraft on the frequency 1 090 MHz with standardised information that is used by air traffic management.

Automatic Dependent Surveillance (ADS) is a surveillance technique that requires an aircraft to transmit via a data link information extracted from the on-board navigational systems information with respect to the aircraft's identity, and position in four dimensions as well as additional information such as the flight plan. Transmission of this data is automatic and does not require the intervention of the pilot thus minimising pilot workload.

There are two techniques for the implementation of ADS that are based on the same principles:

Automatic dependent surveillance-contract:

ADS-C transmits a set of agreed parameters extracted from the on-board systems over a data link to a ground station where it is used to build a surveillance picture for use by air traffic controllers. ADS-C data is transmitted to a particular ground station based on a contract established between the ADS-C provider and the aircraft operator over a frequency determined by the ground station. ADS-C is currently supported by satellite networks.

Automatic dependent surveillance-broadcast:

In ADS-B an agreed set of parameters that have been extracted from the on-board systems and are broadcast by an aircraft on an agreed common frequency at a high rate of transmissions. The broadcast signal can then be received, relayed to an air traffic control centre and used to provide a surveillance picture to an air traffic controller. Additionally the data can also be received by another aircraft and used to provide the pilot of that aircraft with a representation of the location of nearby aircraft.

Similar to radar, a limitation of ADS-B is that aircraft transmissions cannot be received by a ground station beyond line-of-sight for processing and use by air traffic management. The propagation constraints with a terrestrial system prohibit coverage to much of the oceanic airspace, and makes coverage impractical for transpolar and other remote regions. Many areas of the world cannot be practically covered using terrestrial ADS-B stations to receive aircraft transmissions and provide the data to air traffic management. There are vast regions of the world that can be reached only by using satellite communications. The extension of ADS-B via satellite has the capability to provide complete global coverage to support ADS-B beyond the present terrestrial limitations.

A number of satellite systems are in development that will place ADS-B receivers on-board low-earth orbiting satellites, permitting the existing aircraft signals to be received and relayed to appropriate air traffic management centres and airlines. This will facilitate tracking of commercial aircraft anywhere on the globe. Air traffic management will also benefit from this new capability. As a result, the consideration of global flight tracking at WRC-15 may include the possibility of an allocation to the AMS(R)S for the reception only of ADS-B signals.

NATO Military Interest

The 960-1 164 MHz band is heavily used by and is essential to NATO militaries. Link 16 operates in the band but does not have status, however 1 030 and 1 090 MHz are already notched out by Link 16 operations. NATO could benefit from the additional air traffic control information and global coverage that the satellite extension of ADS-B could provide. As well, the satellite reception of ADS-B, in providing another layer of redundancy for air traffic management, may over time reduce the need for redundant terrestrial interrogators and thus reduce the congestion on 1 030 and 1 090 MHz.

Regional Groups and other International Organisations

NATO Military Position

NATO supports exploring all technical solutions and required regulatory provisions to facilitate global flight tracking provided that regulatory changes do not reduce or prohibit the existing operational capabilities of military systems, e.g. military interrogation friend or foe (IFF) systems.

Military Importance